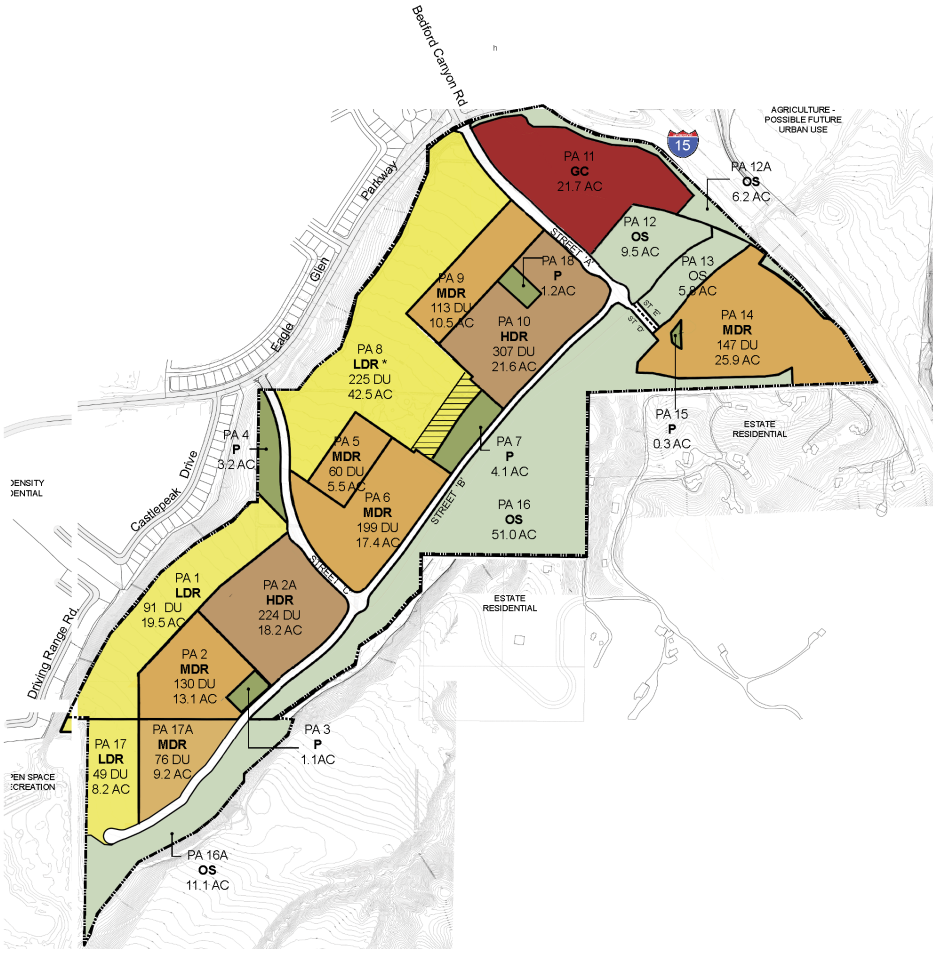
DRAFT
SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT

FOR
ARANTINE HILLS SPECIFIC PLAN AMENDMENT NO. 3

SCH NO. 2006091093

CITY OF CORONA, CALIFORNIA



February 2020

enplanners

This Page Intentionally Left Blank

DRAFT
SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT

FOR
ARANTINE HILLS SPECIFIC PLAN AMENDMENT NO. 3

SCH NO. 2006091093

CITY OF CORONA, CALIFORNIA

Submitted to:

City of Corona
Community Development Department
400 S. Vicentia Avenue
Corona, California 92882
(951) 736-2434

Prepared by:

Enplanners, Inc.
5225 Canyon Crest Drive. Suite 71-350
Riverside, California 92507
(951) 289-5233

Project No. CICOR1901

February 2020

enplanners

This Page Intentionally Left Blank

TABLE OF CONTENTS

1.0 INTRODUCTION AND BACKGROUND 1-1

1.1 PROPOSED CHANGES TO THE APPROVED PROJECT 1-1

1.2 PURPOSE OF A SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT 1-1

1.3 SUPPLEMENTAL EIR 1-2

1.4 TECHNICAL STUDIES AND RELATED DOCUMENTS INCORPORATED BY REFERENCE 1-3

1.5 INTENDED USE OF THE SUPPLEMENTAL EIR 1-5

1.6 LEAD AGENCY CONTACT INFORMATION 1-5

1.7 PUBLIC REVIEW PERIOD 1-5

1.8 FORMAT OF THIS ENVIRONMENTAL ANALYSIS REPORT 1-9

2.0 MODIFIED PROJECT DESCRIPTION 2-1

2.1 MODIFIED PROJECT LOCATION AND SETTING 2-1

2.2 MODIFIED PROJECT DEFINITION 2-6

2.2.1 Modified Project 2-6

2.2.2 Proposed Commercial 2-8

2.2.3 Proposed Open Space 2-9

2.3 ADJACENT LAND USES 2-9

2.4 GENERAL PLAN LAND USE DESIGNATIONS AND ZONING 2-10

2.5 MODIFIED PROJECT COMPONENTS 2-15

2.5.1 General Plan Amendment 2-15

2.5.2 Specific Plan Amendment 2-15

2.5.3 Parcel Map 2-16

2.5.4 Noise Variance 2-23

2.5.6 Precise Plan 2-31
2.6 COMPARISON OF MODIFIED PROJECT (PROPOSED AHSP) TO APPROVED PROJECT (APPROVED AHSP) 2-35
2.7 PROJECT OBJECTIVES 2-35
2.8 DISCRETIONARY ACTIONS, PERMITS, AND OTHER APPROVALS 2-37
3.0 COMPARATIVE EVALUATION OF ENVIRONMENTAL IMPACTS 3.0-1
3.1 INTRODUCTION 3.0-1
3.2 MODIFIED ENVIRONMENTAL CHECKLIST 3.0-3
3.3 ENVIRONMENTAL TOPICS CHANGED BY MODIFIED PROJECT 3.0-3
3.4.1 AESTHETICS 3.4.1-1
3.4.2 AGRICULTURE AND FOREST RESOURCES 3.4.2-1
3.4.3 AIR QUALITY 3.4.3-1
3.4.4 BIOLOGICAL RESOURCES 3.4.4-1
3.4.5 CULTURAL RESOURCES 3.4.5-1
3.4.6 GEOLOGY AND SOILS 3.4.6-1
3.4.7 GREENHOUSE GAS EMISSIONS 3.4.7-1
3.4.8 HAZARDS AND HAZARDOUS MATERIALS 3.4.8-1
3.4.9 HYDROLOGY AND WATER QUALITY 3.4.9-1
3.4.10 LAND USE AND PLANNING 3.4.10-1
3.4.11 MINERAL RESOURCES 3.4.11-1
3.4.12 NOISE 3.4.12-1
3.4.13 POPULATION AND HOUSING 3.4.13-1
3.4.14 PUBLIC SERVICES 3.4.14-1
3.4.15 RECREATION 3.4.15-1
3.4.16 TRANSPORTATION AND TRAFFIC 3.4.16-1
3.4.17 UTILITIES AND SERVICE SYSTEMS 3.4.17-1
4.0 UPDATED MITIGATION MONITORING AND REPORTING PROGRAM 4-1
5.0 LIST OF PREPARERS AND PERSONS CONTACTED 5-1

5.1 CITY OF CORONA 5-1
5.2 ENPLANNERS 5-1

APPENDICES

A: NOP, NOP Response Letters
B-1: Bedford Marketplace Air Quality and Greenhouse Gas Memorandum
B-2: Bedford Marketplace Soil Import/Export Air Quality Assessment
C-1: Biological Technical Report
C-2: MSHCP Consistency Analysis
D-1: Cultural and Paleontological Resources Assessment
D-2: Cultural/Paleontological Resource Survey Mass Grading Plan
E-1: Preliminary Geotechnical Evaluation
E-2: Preliminary Geotechnical Recommendations Mass Grading Plan and Haul Route Study
F-1: Phase I Environmental Site Assessment, Bedford Marketplace - Arantine Hills Tract 8
F-2: Phase I Environmental Site Assessment, Bedford Marketplace – RCTC Portion
G-1: Preliminary Water Quality Management Plan
G-2: Water Supply Assessment Update
G-3: Preliminary Hydrology Analysis Tentative Tract Map 37788
G-4: PA 14 Hydrology and WQMP Certification
H: Noise Impact Analysis
I: Traffic Study
J: Sewer System Hydraulic Analysis Bedford Marketplace

FIGURES AND TABLES

FIGURES

Figure 2.1: Aerial View of Regional and Project Location 2-3

Figure 2.2: Existing and Proposed General Plan Land Use Designations 2-11

Figure 2.3: Existing and Proposed Zoning Designation 2-13

Figure 2.4: Proposed Arantine Hills Specific Plan Land Use Plan 2-17

Figure 2.5A: Parcel Map – Sheet 1 2-19

Figure 2.5B: Parcel Map – Sheet 2 2-21

Figure 2.6: Soil Import Alternative 1 Haul Route 2-25

Figure 2.7: Soil Import Alternative 2 Haul Route 2-29

Figure 2.8: Modified Project Site Plan 2-33

TABLES

1.A: Summary of Comments Received in Response to the NOP 1-6

2.A: Comparison of the Approved Land Uses and the Proposed Amendment to the Arantine Hills Specific Plan 2-7

2.B: Existing and Surrounding Land Use, General Plan Land Use Designations, Zoning 2-9

2.C: Existing and Proposed General Plan, Specific Plan, and Zoning Quantities 2-10

3.4.3.A: Unmitigated Modified Project Site Construction Emissions 3.4.3-5

3.4.3.B: Mitigated Modified Project Site Construction Emissions 3.4.3-6

3.4.3.C: Increase in Emissions from Modified Project Site 3.4.3-6

1.0 INTRODUCTION AND BACKGROUND

1.1 PROPOSED CHANGES TO THE APPROVED PROJECT

The project Applicant, Bedford Marketplace, LLC, seeks approval of Amendment No. 3 to the Arantine Hills Specific Plan (AHSP) to increase the boundary of the AHSP by approximately 17.85 acres. The Approved Project, AHSP Amendment No. 2, permits an 80,000 square foot retail commercial center on approximately 10 acres within Planning Area (PA) 11. The Modified Project (AHSP Amendment No. 3) proposes to increase the size of the commercial center located on PA 11 by 11.64 acres and the amount of general commercial uses from 80,000 square feet to 223,108[1] square feet a 135-room hotel. The Modified Project would also add approximately 6.21 acres of Open Space to the AHSP within new PA 12A. To implement the Arantine Hills Specific Plan Amendment (AHSPA), the project Applicant proposes a General Plan Amendment (GPA), Parcel Map (PM), Noise Variance, Precise Plan (PP), and this Supplement to the previously certified AHSP EIR and subsequent amendments. These discretionary approvals represent the "proposed project," "proposed Modified Project," or "Modified Project" analyzed in this Supplemental Environmental Impact Report, and they are summarized as follows:

- GPA 2019-0002
- SPA 2019-0005
- PM 37788
- PP 2019-0008
- VMIN 2019-0006 (Noise Variance)

1.2 PURPOSE OF A SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT

The purpose of a Supplemental Environmental Impact Report (SEIR) is to assess the change in the environmental significance conclusions originally reached in a previous Environmental Impact Report (EIR) attributable to either: 1) change in a project; 2) change in the circumstance under which a project is undertaken; or 3) introduction of new information of substantial importance that was not known at the time the previous EIR was certified. The reason for preparation of this SEIR primarily relates to the first condition (i.e., change in a project), because the project definition contained in the current proposal differs from the project that was approved as part of previous environmental documents. Section 1.1 contains a brief summary of the proposed project changes and Section 2.0 contains a detailed discussion

[1] The 223,108 square feet of general commercial uses consists of 134,378 square feet of retail space and 88,730 square feet of hotel space.

of the proposed project changes. The process undertaken and the determinations reached by the City governing why this SEIR is being prepared are detailed in Section 1.3.

1.3 SUPPLEMENTAL EIR

The purpose of this document is to evaluate the proposed changes to the AHSP (i.e., proposed project or Modified Project) in comparison to the project as originally approved in 2012, amended in 2016, and amended a second time in 2018. The prior approvals were based on the original 2012 AHSP EIR, 2016 SEIR No. 1, and 2018 EIR Addendum. In this SEIR or SEIR No. 2, references to the Prior EIR constitute the three prior environmental approvals for the Approved Project (i.e., the original certified EIR, SEIR No. 1, and the EIR Addendum). All prior environmental approvals as well as SEIR No. 2 are designated by State Clearinghouse Number 2006091093.

SEIR No. 2 evaluates the proposed modifications to the Approved Project in accordance with the California Environmental Quality Act (CEQA) as implemented by Public Resources Code (PRC) Section 21000 et seq. and the CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3: Guidelines for the Implementation of the California Environmental Quality Act, Section 1500 et seq.). SEIR No. 2 has been prepared by the City to address potential impacts from the proposed changes to the AHSP in comparison to the impacts evaluated for the approved AHSP. In succinct terms, SEIR No. 2 compares the Modified Project's impacts to the Approved Project's impacts.

To determine whether the Modified Project is eligible for the preparation of an SEIR, the criteria in Section 15162 governing preparation of Subsequent CEQA documents and the additional criteria in Section 15163 governing preparation of Supplemental CEQA documents must be met, as follows:

1. There are no substantial changes associated with the Modified Project which require major revisions to the previous EIR due to new significant impacts or a substantial increase in the severity of previously identified significant effects (Section 15162).
2. There are no substantial changes with respect to the circumstances under which the Modified Project is undertaken which require major revisions to the previous EIR due to new significant impacts or a substantial increase in the severity of previously identified significant effects (Section 15162).
3. There is no new information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified that shows any of the following (Section 15162):
    (a) The Modified Project will have one or more significant effects not discussed in the previous EIR.

(b) Significant effects previously examined will be substantially more severe than shown in the previous EIR.

(c) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the Modified Project, but the project proponents decline to adopt the mitigation measure or alternative.

(d) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

4. Only minor additions or changes would be necessary to make the previous EIR adequately apply to the Modified Project in the changed situation (Section 15163).

As stated in Section 15163 of the CEQA Guidelines, the Lead Agency may choose to prepare a Supplemental EIR rather than a Subsequent EIR if:

1. Any of the conditions described in Section 15162 would require the preparation of a subsequent EIR, and
2. Only minor additions or changes would be necessary to make the previous EIR adequately apply to the Modified Project in the changed situation.

The City has determined that a Supplemental EIR, rather than a Subsequent EIR, is appropriate for the Modified Project because all of the conditions in Section 15163 regarding preparation of a Supplemental EIR can be met, including minor changes to the Prior EIR necessary to make it adequately apply to the Modified Project.

An SEIR need contain only the information necessary to make the Prior EIR adequate for the Modified Project as revised (Section 15163). Additionally, an SEIR may be circulated in accordance with CEQA Section 15087 by itself without recirculating the Prior EIR. When the Lead Agency decides whether to approve the Modified Project, the decision-making body shall consider the previous EIR as revised by the SEIR. A finding under Section 15091 must be made for each significant effect shown in the previous EIR as revised in the SEIR.

1.4 TECHNICAL STUDIES AND RELATED DOCUMENTS INCORPORATED BY REFERENCE

SEIR No. 2 incorporates and references several technical studies, analyses, and reports prepared specifically to analyze the effects of the Modified Project.

Technical studies and reports addressing the Modified Project have been used to prepare the applicable analytical sections of SEIR No. 2. These documents are included in SEIR No. 2 Appendices B through J and include:

- *Bedford Marketplace Air Quality and Greenhouse Gas Memorandum*, November 26, 2019, Urban Crossroads
- *Bedford Marketplace Soil Import/Export Air Quality Assessment*, August 9, 2019, Urban Crossroads
- *Biological Technical Report for the Bedford Marketplace Project*, October 2019, Carlson Strategic Land Solutions
- *Consistency Determination Bedford Marketplace Project*, October 2019, Carlson Strategic Land Solutions
- *Cultural and Paleontological Resources Assessment Bedford Canyon Marketplace*, August 9, 2019, Duke Cultural Resources Management
- *Cultural/Paleontological Resource Survey Update for the Bedford Canyon Marketplace Project-Bedford Ranch Phase 2B Mass Grading Plan*, November 13, 2019, Duke Cultural Resources Management
- *Preliminary Geotechnical Evaluation for Proposed Bedford Marketplace*, July 22, 2019, LGC Geotech
- *Preliminary Geotechnical Recommendations Regarding the Updated Mass Grading Plan and Haul Route Study*, August 30, 2019, LGC Geotech
- *Phase I Environmental Site Assessment Bedford Marketplace - Arantine Hills Tract 8*, June 10, 2019, EBI Consulting
- *Phase I Environmental Site Assessment Bedford Marketplace – RCTC Portion*, June 10, 2019, EBI Consulting
- *Preliminary Water Quality Management Plan Bedford Commercial Site*, January 29, 2020, Hunsaker & Associates
- *Water Supply Assessment Update*, October 17, 2019, Fusco Engineering
- *Hydrology Analysis Lot 8*, November 2019, Hunsaker & Associates
- *PA 14 Hydrology and WQMP Certification*, October 2019, Hunsaker & Associates
- *Bedford Marketplace Noise Impact Analysis*, January 30, 2020, Urban Crossroads
- *Bedford Marketplace Traffic Study*, January 10, 2020, Urban Crossroads
- *Sewer System Hydraulic Analysis*, February 14, 2020, Hunsaker & Associates

1.5 INTENDED USE OF THE SUPPLEMENTAL EIR

CEQA and the CEQA Guidelines establish the City as the Lead Agency, which is defined in CEQA Guidelines Section 15367 as "the public agency which has the principal responsibility for carrying out or approving a project." The Lead Agency is responsible for determining if a project meets the CEQA definition of a project. If determined to be a CEQA project, the Lead Agency determines if a project is exempt from CEQA, requires approval of a Negative Declaration (ND) or Mitigated Negative Declaration (MND), or requires preparation of an EIR.

SEIR No. 2 has been prepared by the City in accordance with CEQA and the CEQA Guidelines. SEIR No. 2 will be used by the City, responsible agencies, and the public for the purpose of evaluating the environmental effects associated with proposed AHSPA No. 3 and associated GPA, SPA, PM, Variance, and PP.

1.6 LEAD AGENCY CONTACT INFORMATION

The Lead Agency for the proposed project is the City of Corona. The contact person for the Lead Agency is:

Sandra Yang, Senior Planner
City of Corona
Community Development Department
400 S. Vicentia Avenue
Corona, California 92882

1.7 PUBLIC REVIEW PERIOD

A notice of preparation (NOP) was distributed to members of the public and public agencies for a 30-day review period starting October 28, 2019. The NOP requested input from recipients regarding the scope and content of the environmental information to be included in the SEIR. At the conclusion of the review period, four agencies provided comments on the NOP. A summary of the agency comment letters is shown in Table 1.A, as well as the location in SEIR No. 2 that addresses the issues raised. The NOP and the NOP response letters are included in Appendix A.

Table 1.A: Summary of Comments Received in Response to the NOP

Agency / Individual	Summary of Comments	Response / Section in SEIR Where Issue is Addressed
South Coast Air Quality Management District Lijin Sun lsun@aqmd.gov (11/19/19)	SCAQMD has provided the following comments/recommendations: • Requested a copy of the SEIR and technical appendices be sent directly to SCAQMD. • The analysis in the SEIR should use the CEQA Air Quality Handbook for guidance and rely on the CalEEMod land use emissions software. • Quantify criteria pollutant emissions and compare the results to SCAQMD's CEQA regional pollutant emissions significance thresholds. • Calculate localized air quality impacts and compare results to localized significance thresholds (LSTs). • Analyze potential adverse air quality impacts from all phases of the project, including construction and operations. • If the project generates substantial heavy-duty diesel vehicle trips, conduct a mobile source health risk assessment. If the project generates significant adverse air quality impacts, alternatives capable of lessening or avoiding the impacts should be considered.	Potential air quality impacts are analyzed in Section 3.4.3. The analysis included in Section 3.4.3 is based on an Air Quality Technical Memo included in Appendix B. The technical memo includes analysis using CalEEMod and incorporates an LST analysis. The proposed Modified Project does not generate or attract substantial heavy-duty diesel vehicle trips; therefore, a health risk assessment is not warranted and was not conducted.
Southern California Association of Governments Ping Chang Anita Au au@scag.ca.gov (11/21/19)	The Southern California Association of Governments (SCAG) recommends the SEIR compare the Modified Project's consistency with the goals and strategies contained in the 2016 Regional Transportation Plan/Sustainable Communities Strategies (2016 RTP/SCS). In addition, SCAG offers assistance regarding where to find applicable demographic and growth forecast data and suggestions regarding mitigation measures.	Consistency with the 2016 RTP/SCS is discussed in Section 3.4.10. Because the Modified Project is part of a larger planning effort (i.e., the AHSP) and the proposed commercial uses will bring commercial uses and services into an area that is lacking such uses and services, the Modified Project is consistent with the 2016 RTP/SCS goals and policies regarding location of land uses to reduce vehicle miles traveled,

Table 1.A: Summary of Comments Received in Response to the NOP

Agency / Individual	Summary of Comments	Response / Section in SEIR Where Issue is Addressed
		reducing traffic congestion and associated noise and air quality impact.
California Department of Fish and Wildlife Joanna Gibson Scott Wilson Joanna.gibson@wildlife.ca.gov (11/25/19)	CDFW recommends the following information be provided/assessed within the SEIR: • An assessment of the various habitat types located within the project footprint and a map that identifies the location of each habitat type. • A general biological inventory of the fish, amphibian, reptile, bird, and mammal species present or have the potential to be present on the project site. • A recent inventory of rare, threatened, endangered, or other sensitive species located within the project footprint and within offsite areas with the potential to be affected. • A recent floristic-based assessment of special status plants and natural communities. • Information regarding the regional setting that is critical to the assessment of environmental impacts. • A full accounting of all mitigation/conservation lands within and adjacent to the project site. • A discussion of potential impacts from lighting, noise, human activity, defensible space, and wildlife-human interactions, including changes to drainage patterns and water quality. • A discussion of potential indirect impacts on biological resources within and adjacent to the project footprint.	Potential impacts to biological resources, including the topics raised by CDFW, are discussed in Section 3.4.4. The analysis included in Section 3.4.4 is based on a Biological Technical Report included in Appendix C-1. The Biological Technical Report also includes a MSHCP Consistency analysis (Appendix C-2), as suggested by CDFW. It is important to note the comment incorrectly describes the project site within the Stephen's Kangaroo Rat Habitat Conservation Plan (SKR HCP) fee are boundary. The project site is located west of I-15 and not within the SKR HCP fee are boundary. Mitigation Measures from the Prior EIR remain applicable, with modifications, to the Modified Project.

Table 1.A: Summary of Comments Received in Response to the NOP

Agency / Individual	Summary of Comments	Response / Section in SEIR Where Issue is Addressed
	• An evaluation of impacts to adjacent open space lands from both construction and long-term operational and maintenance. • A cumulative effects analysis as described under CEQA Guidelines Section 15130. • An analysis of a range of reasonable project alternatives. • CDFW provided sample mitigation measures to consider. • The project is located within the boundaries of the MSHCP and must be evaluated for consistency. • The project is located within the Stephen's Kangaroo Rat Habitat Conservation Plan (SKR HCP) fee are boundary. • The project may be subject to the Lake and Streambed Alteration Program under Section 1602 of the Fish and Game Code.	
Riverside County Transportation Commission Stephanie Bianco sblanco@rctc.org (12/6/19)	The Riverside County Transportation Commission (RCTC) generally supports the Modified Project. To mitigate short term noise impacts, RCTC suggests the Modified Project's soil import operation be limited to hours of the day/night that do not conflict with the general flow of traffic on I-15. In addition, RCTC recommends that the SEIR analyze the effects of I-15 traffic noise levels on the sensitive land uses proposed as part of the Modified Project including a 500-foot buffer.	The project Applicant proposes to import soil during nighttime hours (8:00 p.m. to 4:00 a.m.), if the soil is to be imported from an off-site location as opposed to PA 14. Regarding the effects of traffic noise on the proposed Modified Project's sensitive uses, recent case law has clarified that the purpose of CEQA analysis is to address a project's impacts on the environment and not the environment's impacts on a project. Noise from the I-15 freeway is an existing environmental condition, and therefore the SEIR will not address impacts of

Table 1.A: Summary of Comments Received in Response to the NOP

Agency / Individual	Summary of Comments	Response / Section in SEIR Where Issue is Addressed
		freeway noise on the proposed Modified Project. However, the Modified Project is required to comply with the City's noise ordinance governing interior and exterior noise levels. This will be conducted as part of Precise Plan review and approval.

The Draft SEIR is being distributed to public agencies and other interested parties for review and comment. The Draft SEIR is also available at the following locations and on the City's website:

Corona City Hall
Community Development Department
400 South Vicentia Avenue
Corona, California 92882
Phone: (951) 736-2434

Circulation Desk
Corona Public Library
650 South Main Street
Corona, California 92882
Phone: (951) 736-2381

Hours: Monday through Friday: 8:00 a.m. to 5:00 p.m. www.Corona.Ca.gov

All comments received from agencies and individuals on the Draft SEIR will be accepted during the public review period, which will not be less than 45 days, in compliance with CEQA. All comments on the Draft SEIR should be sent to the City contact person at the address listed above.

Following the close of the public review period, the City will prepare responses to all comments and will compile these comments and responses into a Final SEIR. All responses to comments submitted on the Draft SEIR by public agencies during the CEQA comment period will be provided to those agencies at least 10 days prior to final action on the Modified Project. The City will make findings regarding the extent and nature of the impacts as presented in the Final SEIR. The Final SEIR will need to be certified as complete by the City Council prior to making a decision to approve or deny the Modified Project (i.e., the GPA, SPA, PM, Noise Variance, and PP. Public input is encouraged at all public hearings (e.g., Planning and Housing Commission, City Council) regarding the proposed Modified Project before the City.

1.8 FORMAT OF THIS ENVIRONMENTAL ANALYSIS REPORT

This report has been organized into seven chapters, described below:

- Chapter 1.0: Introduction and Background. Chapter 1.0 includes an introduction to SEIR No. 2, a summary of the project changes constituting the proposed Modified Project and necessitating preparation of SEIR No. 2, a discussion of why SEIR No. 2 is being prepared, documents incorporated by reference, technical studies prepared assessing the Modified Project, intended use of SEIR No. 2, definition of the City as Lead Agency and contact person, the public review process, and the format of SEIR No. 2.
- Chapter 2.0: Modified Project Description. Chapter 2.0 summarizes the proposed Modified Project, describes the location and setting of the Modified Project site and vicinity, describes in detail the major components of the Modified Project requiring discretionary actions by the City, compares the proposed land use changes to the Approved Project, lists the Modified Project objectives, and defines the major discretionary actions and steps necessary to carry out the proposed Modified Project.
- Chapter 3.0: Comparative Evaluation of Environmental Impacts. Chapter 3.0 addresses the Modified Project's potential to have a physical effect on the environment and includes a comparison of those impacts to the Approved Project's impacts analyzed in the Prior EIR. This comparative analysis has been undertaken pursuant to provisions of CEQA to provide decision-makers with a factual basis for determining if any topics would need further assessment in SEIR No. 2 by the application of CEQA Guidelines Section 15163.
- Chapter 4.0: Updated Mitigation Monitoring and Reporting Program. Chapter 4.0 includes the updated Mitigation Monitoring and Reporting Program resulting from the analysis of impacts contained in SEIR No. 2.
- Chapter 5.0: List of Preparers. Chapter 6.0 includes a list of the key individuals who participated in preparing SEIR No. 2.

2.0 MODIFIED PROJECT DESCRIPTION

2.1 MODIFIED PROJECT LOCATION AND SETTING

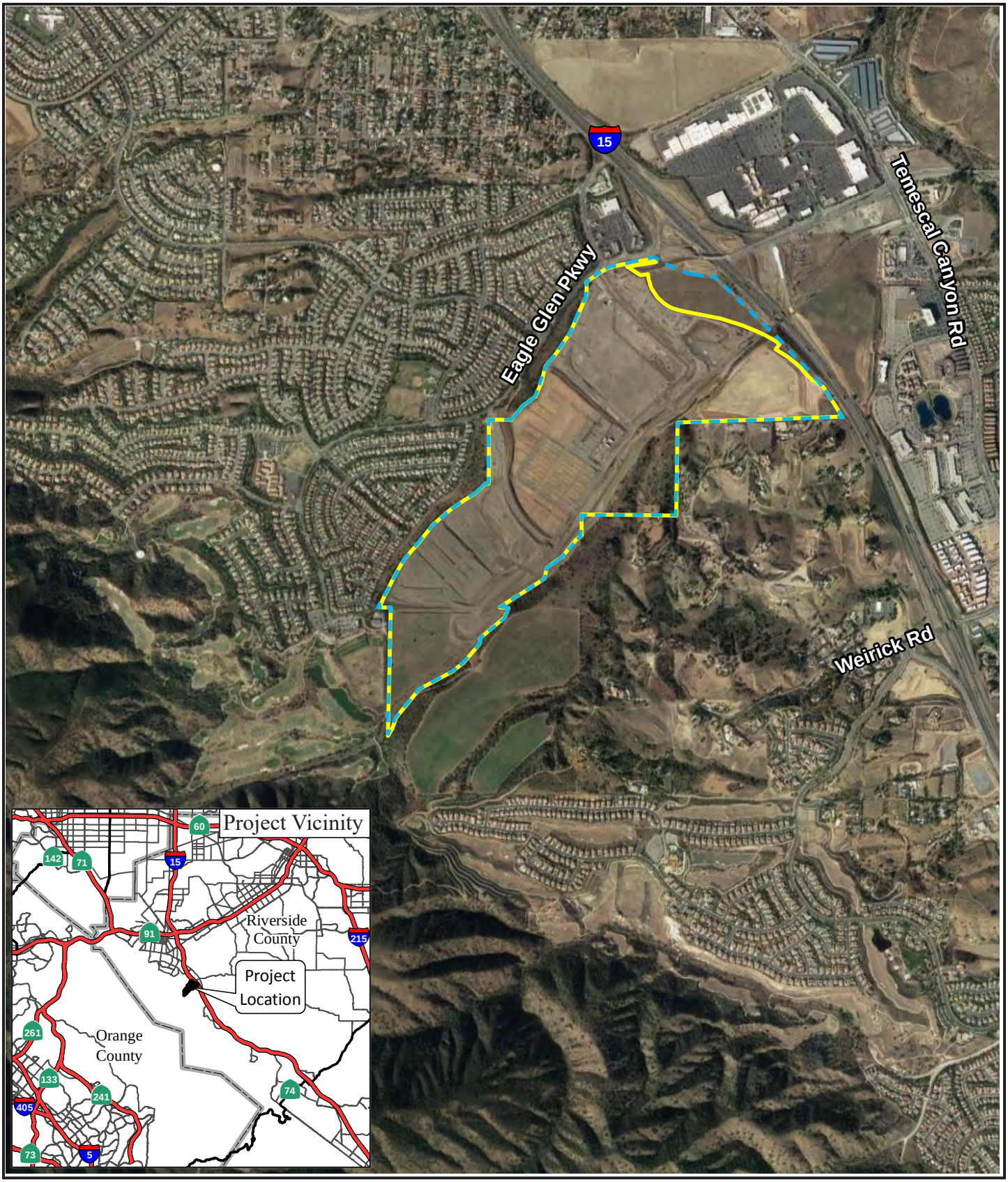
The "proposed project" or "Modified Project" consists of proposed changes to the Arantine Hills Specific Plan (AHSP). The AHSP boundary currently covers 307.8 acres located below the foothills of the Santa Ana Mountains adjacent to the southeastern boundary of the City of Corona (City). The City is generally situated southwest of the City of Riverside, south of the City of Norco, and northwest of the City of Lake Elsinore. The AHSP is bounded by the Eagle Glen Specific Plan development on the north and west, the Cleveland National Forest to the south, and Interstate 15 (I-15) to the east. The proposed project is located within the United States Geological Survey (USGS) 7.5-Minute Topographic Map Corona South, California Quadrangle.

The project Applicant, Bedford Marketplace, LLC, proposes to amend the Arantine Hills Specific Plan (AHSP) to increase the AHSP boundary by approximately 17.85 acres. The proposed Specific Plan Amendment (SPA) would be the third amendment to the AHSP. Arantine Hills Specific Plan Amendment (AHSPA) No. 3 would result in a revised AHSP boundary of 325.7 acres. The 17.85 acre expansion area is located in the northeast portion of the AHSP, adjacent to the east side of Planning Area (PA) 11, at the southwest quadrant of the I-15/Cajalco Road interchange. The 17.85 acre property is currently owned by the Riverside County Transportation Commission (RCTC). The project Applicant proposes to expand commercial land use within the AHSP using a portion of this property. The revised commercial acreage would be developed as a coordinated commercial center referred to as Bedford Marketplace. The remainder of the RCTC property would be designated open space.

A portion of the additional property, currently owned by the Riverside County Transportation Commission (RCTC), would increase the size of the planned commercial center within the AHSP. The resulting acreage would be developed as a coordinated commercial center referred to as Bedford Marketplace. The remainder of the RCTC property would be designated open space.

An aerial view of the existing and proposed AHSP boundaries is shown in Figure 2.1.

This Page Intentionally Left Blank



enplanners

N

N.T.S.

Source: Google (2019).

Legend

Approved Arantine Hills Specific Plan Boundary

Modified Arantine Hills Specific Plan Boundary

FIGURE 2.1

Arantine Hills Specific Plan Amendment No. 3
Supplemental EIR No. 2
City of Corona

Aerial View of Regional and Project Location

This Page Intentionally Left Blank

The AHSP lies on an alluvial plain located within the Bedford Canyon Wash on the eastern slopes of the Santa Ana Mountains. The AHSP contains varied terrain comprising alluvial deposits over stable bedrock below. Bedford Canyon Wash runs northeast through the AHSP. The AHSP consists of two topographical areas, the elevated bluff above and south of the canyon and the lower-lying Bedford Canyon Wash. The Bedford Canyon Wash separates the bluff area from the lower-lying areas immediately to the north. The lower-lying areas are relatively flat, with an overall downward slope to the northeast.

Consistent with the approved and current AHSP, a majority of the property in the AHSP boundary has been previously graded as part of the developing Bedford residential community. The 17.85-acre expansion area is located adjacent to the east side of the current PA 11 boundary. PA 11 is located on the east side of the Bedford Canyon Road southerly extension from Cajalco Road, with the Bedford community on the west side of the Bedford Canyon Road extension. The I-15 freeway including the I-15/Cajalco Road Interchange currently under construction is located to the east of PA 11 and the 17.85-acre expansion area. The expansion area contains ruderal vegetation and has been subject to disturbance from construction of the I-15/Cajalco Road Interchange.

PA 11 currently consists of an approximately 10-acre property planned for commercial uses located adjacent to the expansion area. PA 11 has been graded as a flat pad consistent with the approved and current AHSP, and utility connections have been stubbed at the entrance to the pad. The extension of Bedford Canyon Road southerly from Cajalco Road forms the western boundary of current PA 11. The new section of Bedford Canyon Road has been graded, paved, and curb, gutter, and sidewalk have been installed.

Bedford Canyon Wash lies to the south of the expansion area along the southern portion of the lower-lying region of the current AHSP and marks the boundary of the elevated areas further south. The Wash is an ephemeral stream with a sandy bottom and sparsely vegetated alluvial fan sage scrub and non-native vegetation. The Wash receives flows from the Santa Ana Mountains, through the Eagle Glen Golf Club, through the AHSP area, continuing downstream to Temescal Creek and ultimately the Santa Ana River. As part of implementation of the current AHSP, the Wash has been widened and improved with buried rip-rap along the banks and buried grade control structures to control erosion and scour. Two concrete crossings (upstream and downstream) provide access to the south side of the Wash and the associated maintenance access road. Restoration of Bedford Canyon Wash includes planting with an alluvial fan sage scrub seed mix. The aerial view of the project area shown in previously referenced Figure 2.1 provides an indication of the project site coverage.

2.2 MODIFIED PROJECT DEFINITION

2.2.1 Modified Project

The proposed changes to the Arantine Hills Specific Plan (AHSP) represent the "Modified Project" or "proposed project" under scrutiny in this Supplemental EIR (SEIR). To implement the proposed Arantine Hills Specific Plan Amendment (AHSPA) requested by the project Applicant, Bedford Marketplace, LLC, several discretionary actions must be approved by the City of Corona (City). These actions include approval of this SEIR (SEIR No. 2), a General Plan Amendment (GPA), Specific Plan Amendment (SPA), Parcel Map (PM), Noise Variance, and Precise Plan (PP). Each of these actions, or project components, is described in Section 2.5.

The AHSP was first approved in 2012 by certified EIR, amended in 2016 by SEIR No. 1, and amended a second time in 2018 by EIR Addendum. The AHSP guides development of up to 1,806 residential dwelling units (dus) on 191.6 acres, 80,000 square feet (sf) of commercial building area on 10.03 acres, 9.9 acres of parks, 77.4 acres of open space, and 18.9 acres of master planned roadways within the current 307.8-acre AHSP boundary.

The proposed SPA is the third amendment to the AHSP. AHSPA No. 3 would expand the AHSP boundary by approximately 17.85 acres consisting of 11.64 acres of additional General Commercial (GC) land use and 6.21 acres of additional Open Space (OS). Specifically, the 17.85 acres would be added to PA 11. The overall AHSP boundary would expand from 307.8 to 325.7 acres, with GC land use increasing from 10.0 to 21.7 acres and OS increasing from 77.4 to 83.6 acres. Planned residential, park, and roadway development quantities/acreages would not be affected.

The 11.64 acre increase in GC land use would expand the quantity of commercial building area by approximately 143,108 sf that includes a 135-room hotel. The resulting commercial building area would be 223,108 sf on 21.67 acres. The permitted land use types in the AHSP GC category include retail, restaurants, services, entertainment, lodging and offices plus community services including daycare, emergency medical care and others. The permitted GC land use types would remain unchanged as part of AHSPA No. 3.

As noted previously, the 6.21 acre increase in OS would result in a revised total of 83.6 acres.

For the purposes of SEIR No. 2, the following naming conventions are used interchangeably:

- Approved Project = current AHSP = existing AHSP. As originally approved in 2012, modified by SPA No. 1 in 2016, and modified by SPA No. 2 in 2018. The Approved Project encompasses 307.8 acres and allows up to 1,806 residential dus on 191.6 acres, 80,000 sf of commercial building area on 10.03 acres, 9.9 acres of parks, 77.4 acres of open space, and 18.9 acres of master planned roadways within a 307.8-acre AHSP boundary.

- Modified Project = proposed Modified Project = proposed project = proposed AHSPA No. 3. The overall AHSP boundary would increase from 307.8 to 325.7 acres, with GC acreage increasing from 10.0 to 21.7 (11.64) acres and OS acreage increasing from 77.4 to 83.6 (6.21 acres). Planned residential, park, and roadway development quantities/acreages would not be affected. The expansion of the AHSP boundary would result in an increase of approximately 143,108 sf in commercial building area that includes a 135-room hotel over and above the Approved Project.

- Modified Project Site = the 17.85-acre expansion area. The Modified Project Site pertains only to the 11.64 acres of GC and 6.21 acres of OS land uses to be added to the AHSP. The property to be designated GC would be added to existing PA 11 and the property to be designated OS would form new PA 12A.

Because of the naming convention similarity between the Modified Project and the Modified Project Site as used in SEIR No. 2, it is worth reiterating the difference. The Modified Project or proposed project refers to the entire AHSP as revised by proposed AHSPA No. 3. The Modified Project Site references only the 17.85-acre property to be added to the AHSP boundary.

The Modified Project Site currently has a lower elevation than the commercial pad in PA 11. The Modified Project Site is also lower in elevation than the sewer lift station recently constructed as part of the approved AHSP in PA 12 and 13 adjacent to the south of PA 11. Sewage from the Modified Project Site would not be able to gravity flow to the lift station. To bring the Modified Project Site up to an elevation similar (within five feet) of the existing 10-acre commercial pad in PA 11 and to enable gravity flow to the existing sewer lift station, import of approximately 440,000 cubic yards of soil is required.

Table 2.A summarizes the Approved Project and Modified Project land use acreages and development quantities by land use type.

Table 2.A: Comparison of the Approved Land Uses and the Proposed Amendment to the Arantine Hills Specific Plan

Land Use	Approved Project		Modified Project	
	Acreage	DUs/SF	Acreage	DUs/SF
Residential	191.6	1,806	191.6	1,806
Commercial	10.03	80,000	21.7	223,108[1]
Parks	9.9	NA	9.9	NA
Open Space	77.4	NA	83.6	NA
Roadways	18.9	NA	18.9	NA

DUs = residential dwelling units

SF = commercial building area
NA = not applicable, not considered a developed land use
[1] Includes a 135-room hotel.

2.2.2 Proposed Commercial

The 11.64 acre increase in GC land use would expand the quantity of commercial building area in the AHSP by approximately 143,108 sf which includes a 135-room hotel. The resulting commercial building area would be 223,108 sf on 21.67 acres. The permitted land use types in the AHSP GC category include retail, restaurants, services, entertainment, lodging and offices plus community services including daycare, emergency medical care and others. The permitted GC land use types would remain unchanged as part of AHSPA No. 3.

Bedford Marketplace would have three entrances from the extension of Bedford Canyon Road south from Cajalco Road/Eagle Glen Parkway. A combination 8-foot sidewalk and 6-foot trail would form the western boundary of the commercial center. The pedestrian linkages are intended to provide connectivity between the Bedford Canyon Road/Eagle Glen Parkway intersection to the south and a recently constructed trail system located on the north side of Bedford Canyon Wash, a recently constructed dog park, and to the developing Bedford residential community.

The retail and service uses would occupy a majority of PA 11 fronting Cajalco Road to the north and Bedford Canyon Road (extended) to the west. The eastern border of the retail and service uses would be the limits of the AHSP boundary as revised by the Modified Project. While the retail and service entities have not been finalized and are subject to change, potential uses within Bedford Marketplace include a fuel facility with convenience store, auto-spa, quick serve coffee with drive thru, financial institution with drive thru, day care center, health and fitness club, super market, pharmacy, hotel, sit-down restaurants, quick serve restaurants, and other retail stores consistent with neighborhood retail centers.

Parking consistent with the City's parking code is planned throughout Bedford Marketplace. Shopping center identification monument signage is planned at the corner of Bedford Canyon Road and Eagle Glen Parkway. A tenant identification pylon sign facing I-15 is planned north of the hotel site and a pylon sign specific to the hotel is planned south of the hotel site along I-15. A tenant monument sign is planned at the north perimeter of the site adjacent to Eagle Glen Parkway as well as along the west perimeter adjacent to Bedford Canyon Road. Certain uses, such as the hotel, will also have wall-mounted building signage on the eastern elevation of the building. A detailed master sign program outlines all proposed signage.

The proposed 135-room hotel would be located south of the commercial uses in the southeastern portion of the Modified Project Site, north of the proposed water quality basin, and east of the existing water

quality basin in PA's 12 and 13. The hotel would have a height of four stories or 50 feet, whichever is greater. Hotel parking would be accommodated by surface parking lots.

2.2.3 Proposed Open Space

The 6.21 acre increase in OS land use would increase the quantity of open space area in the AHSP from 77.4 to 83.6 acres. The increase in OS would occur in newly created PA 12A proposed as part of AHSPA No. 3.

2.3 ADJACENT LAND USES

Directly north of the Modified Project is the Eagle Glen Specific Plan area, a residential and golf course community. There is an existing neighborhood commercial center located on Bedford Canyon Road, just north of Cajalco Road, adjacent to I-15. To the south of the Modified Project lies unincorporated land and a series of large scattered lots located on rugged topography that are privately owned agricultural and estate residential land.

Table 2.B provides a summary of existing land use, General Plan land use designations, and zoning within the AHSP boundary and the surrounding areas.

Table 2.B: Existing and Surrounding Land Use, General Plan Land Use Designations, Zoning

Location	Current Land Uses	General Plan Land Use Designations	Zoning
Existing AHSP boundary	Vacant/developing residential and commercial uses	General Commercial; High Density Residential; Medium Density Residential; Low Density Residential; Parks; Open Space; and Master Planned Roadways	General Commercial; High Density Residential; Medium Density Residential; Low Density Residential; Parks; Open Space; and Master Planned Roadways
North and Northwest	Eagle Glen Specific Plan	Low Density Residential and Commercial Center	Single-Family Residential
Southeast	Unincorporated Rural Residential	Riverside County Rural Residential	Riverside County Rural Residential
Northeast	I-15 right-of-way; improvements under construction	Agriculture (including the 17.85 acre RCTC property constituting the Modified Project Site	Agriculture

Source: City of Corona General Plan Land Use Map, adopted March, 2004.

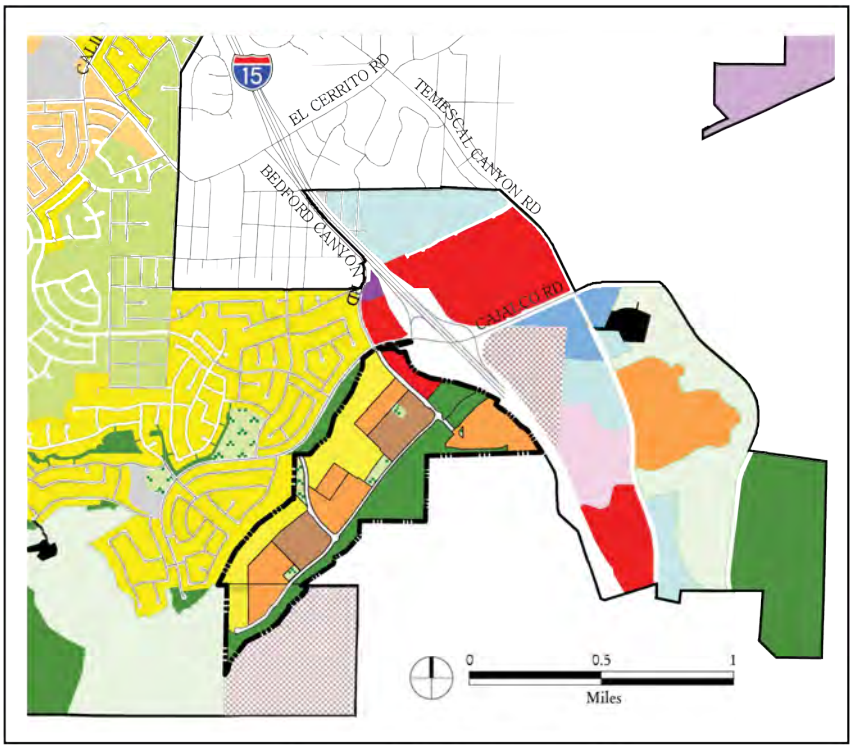
2.4 GENERAL PLAN LAND USE DESIGNATIONS AND ZONING

Existing land use, General Plan Land Use Designations, and Zoning for the current AHSP and adjacent properties are shown in previously referenced Table 2.B. The Approved Project (i.e., current AHSP) and Modified Project (i.e., proposed AHSP) General Plan, Specific Plan, and Zoning quantities are shown in Table 2.C. Figure 2.2 illustrates the existing and proposed General Plan land use designations for the AHSP. Figure 2.3 illustrates the existing and proposed zoning designations for the AHSP.

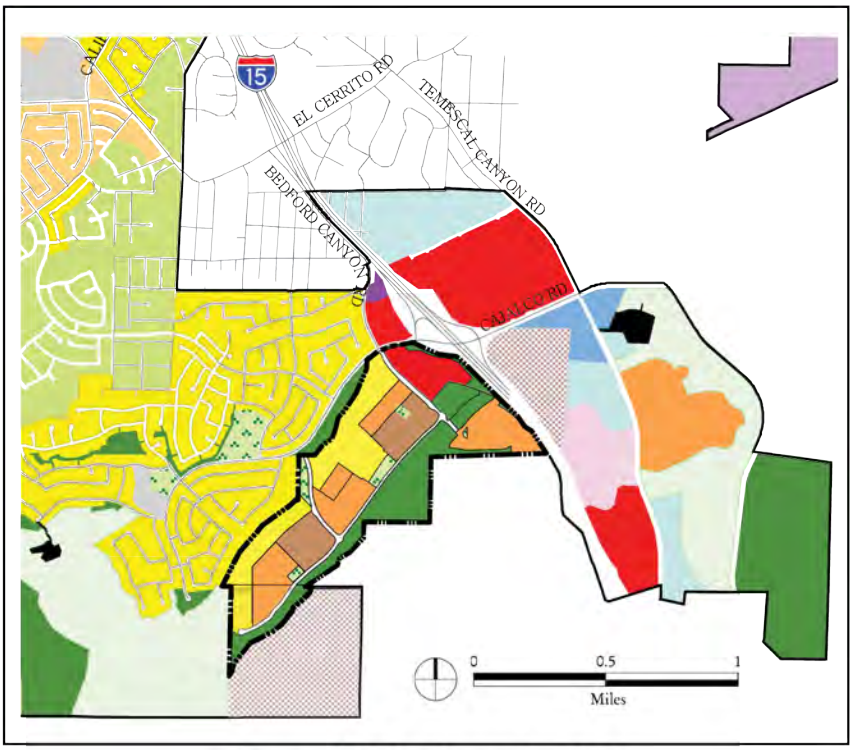
Table 2.C: Existing and Proposed General Plan, Specific Plan, and Zoning Quantities

Land Use	Approved Project Quantities	Modified Project Quantities
General Commercial (GC)	10.03 acres	21.7 acres
High Density Residential (HDR)	39.6 acres	39.6 acres
Medium Density Residential (MDR)	81.8 acres	81.8 acres
Low Density Residential (LDR)	70.2 acres	70.2 acres
Parks (P)	9.9 acres	9.9 acres
Open Space (OS)	77.4 acres	83.6 acres
Master Plan of Roadways	18.9 acres	18.9 acres
TOTAL	307.8 acres	325.7 acres

Sources: Arantine Hills Specific Plan, KTGY Group, Inc., adopted January 2019; Arantine Hills Specific Plan, Amendment No. 3, KTGY Group, Inc., December 2019.



Approved GPA (January 2019)



Proposed GPA (November 2019)

City Boundary

Land Use Designations

- Agriculture - Possible Future Urban Use
- Rural Residential I (0.2 - 0.5 du/adjusted gross acre)
- Rural Residential II (0.5 - 1 du/adjusted gross acre)
- Estate Residential (1 - 3 du/adjusted gross acre)
- Low Residential (3 - 6 du/adjusted gross acre)
- Low Medium Residential (6 - 8 du/adjusted gross acre, single family detached units)
- Medium Residential (6 - 15 du/adjusted gross acre, single and multi-family units)
- High Residential (15 - 36 du/adjusted gross acre, up to 75 du/ adjusted gross acre for senior units)
- General Commercial
- Office Professional
- General Industrial
- Light Industrial
- Mixed Use I: Commercial and Residential
- Mixed Use II: Commercial and Residential
- Downtown Commercial/ Mixed Use
- Open Space General
- Open Space Recreation
- Park
- Public School
- Fire Station
- Utility
- Site Boundaries

Source: City of Corona City Boundary, 2003, General Plan 2004, Streets, 2000; and EIP Associates, General Plan and GIS Program, April 19, 2004.

enplanners

FIGURE 2.2

N

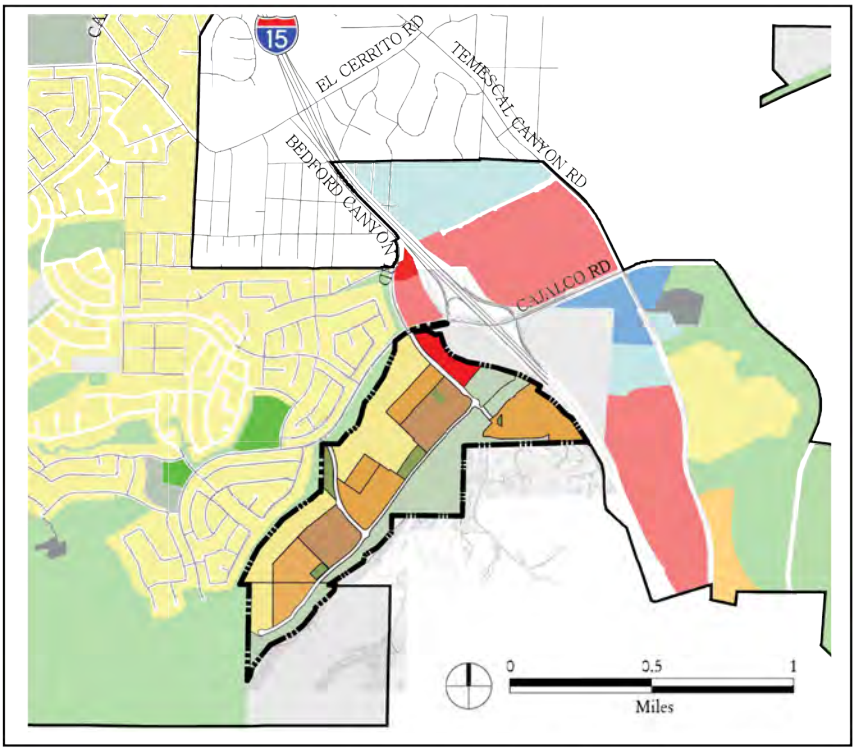
N.T.S.

Source: Google (2019); KTGY (10/21/2019)

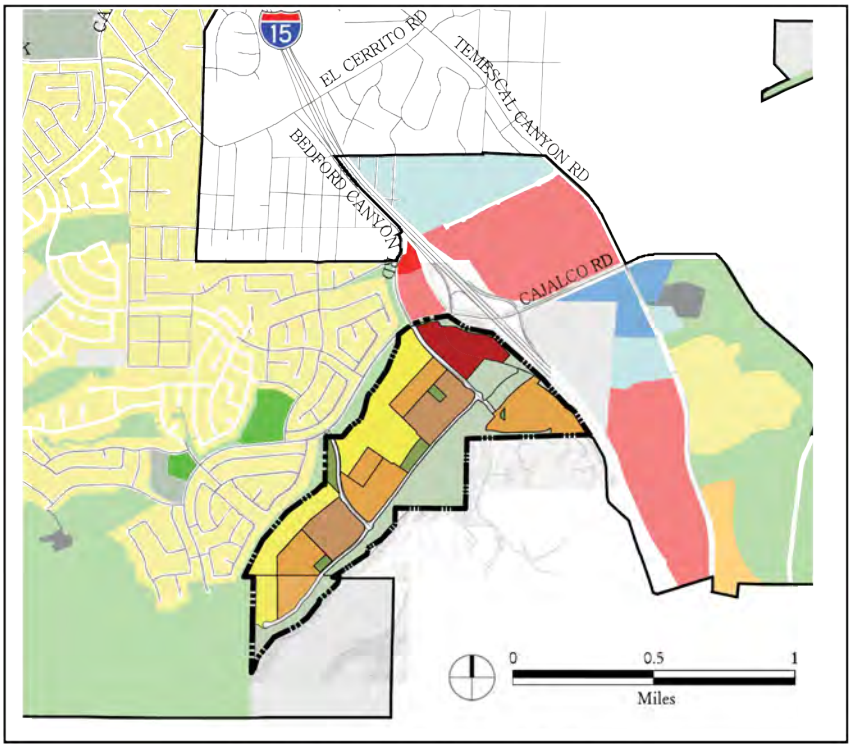
Arantine Hills Specific Plan Amendment No. 3
Supplemental EIR No. 2
City of Corona

Existing and Proposed General Plan Land Use Designation

This Page Intentionally Left Blank



Approved Zoning (January 2019)



Proposed Zoning (November 2019)

- City Boundary
- Single Family Residential
- Multiple Family Residential
- Commercial/Industrial
- Heavy Industrial
- Commercial
- Utility
- Fire Station
- Schools
- Open Space
- Parks
- Agricultural

Source: City of Corona, Geographic Information Services, Last Updated March 8, 2007.

- Site Boundary
- Low Density Residential (LDR)
- Medium Density Residential (MDR)
- High Density Residential (HDR)
- General Commercial (GC)
- Parks (P)
- Open Space (OS)
- Master Planned Roadways

enplanners

N

N.T.S.

Source: Google (2019); KTGY (2019)

FIGURE 2.3

Arantine Hills Specific Plan Amendment No. 3
Supplemental EIR No. 2
City of Corona

Existing and Proposed Zoning Designation

This Page Intentionally Left Blank

2.5 MODIFIED PROJECT COMPONENTS

As summarized in Section 2.2, the Modified Project consists of changes to the AHSP proposed as part AHSPA No. 3. The Modified Project represents the proposed project under scrutiny in SEIR No. 2. These components are a GPA, SPA, PM, PP, and Noise Variance. Each of these components is described in detail below.

2.5.1 General Plan Amendment

The 17.85-acre Modified Project Site currently has a General Plan land use designation of Agriculture. The GPA necessary to implement Modified Project would change the land use designation of the property from Agriculture to GC and OS. The GC designation would consist of an 11.64 acre increase to be allocated to PA 11. The GPA would expand PA 11, as well as the commercial development land use, from approximately 10 acres to 21.67 acres. The OS designation would consist of a 6.21 acre increase in open space land to be allocated to newly formed PA 12A. The GPA would expand OS acreage in the AHSP from approximately 77.4 to 83.6 acres.

2.5.2 Specific Plan Amendment

The Modified Project, proposed AHSPA No. 3, would result in the following changes to the AHSP.

- Change the General Plan land use designation and zoning on the 17.85 acre Modified Project Site from Agriculture to GC and OS.
- Adjust the AHSP boundary by the addition of the approximately 17.85-acre Modified Project Site.
- Designate 11.64 acres of the Modified Project Site as PA 11 in the AHSP with a land use designation of GC. PA 11 would expand from 10.03 to 21.67 acres.
- Increase the total permitted commercial development in the AHSP by 143,108 sf that includes a 135-room hotel. The resulting permitted commercial development in the AHSP would increase from 80,000 sf to 223,108 sf[1] of commercial building which includes the 135-room hotel.
- Designate 6.21 acres of the Modified Project Site as newly formed PA 12A in the AHSP with a land use designation of OS. PA 12A would increase open space in the AHSP by approximately 6.21 acres.
- Increase the overall AHSP boundary from 307.8 to 325.7 acres, with GC land use increasing from 10.0 to 21.7 acres and OS increasing from 77.4 to 83.6 acres.

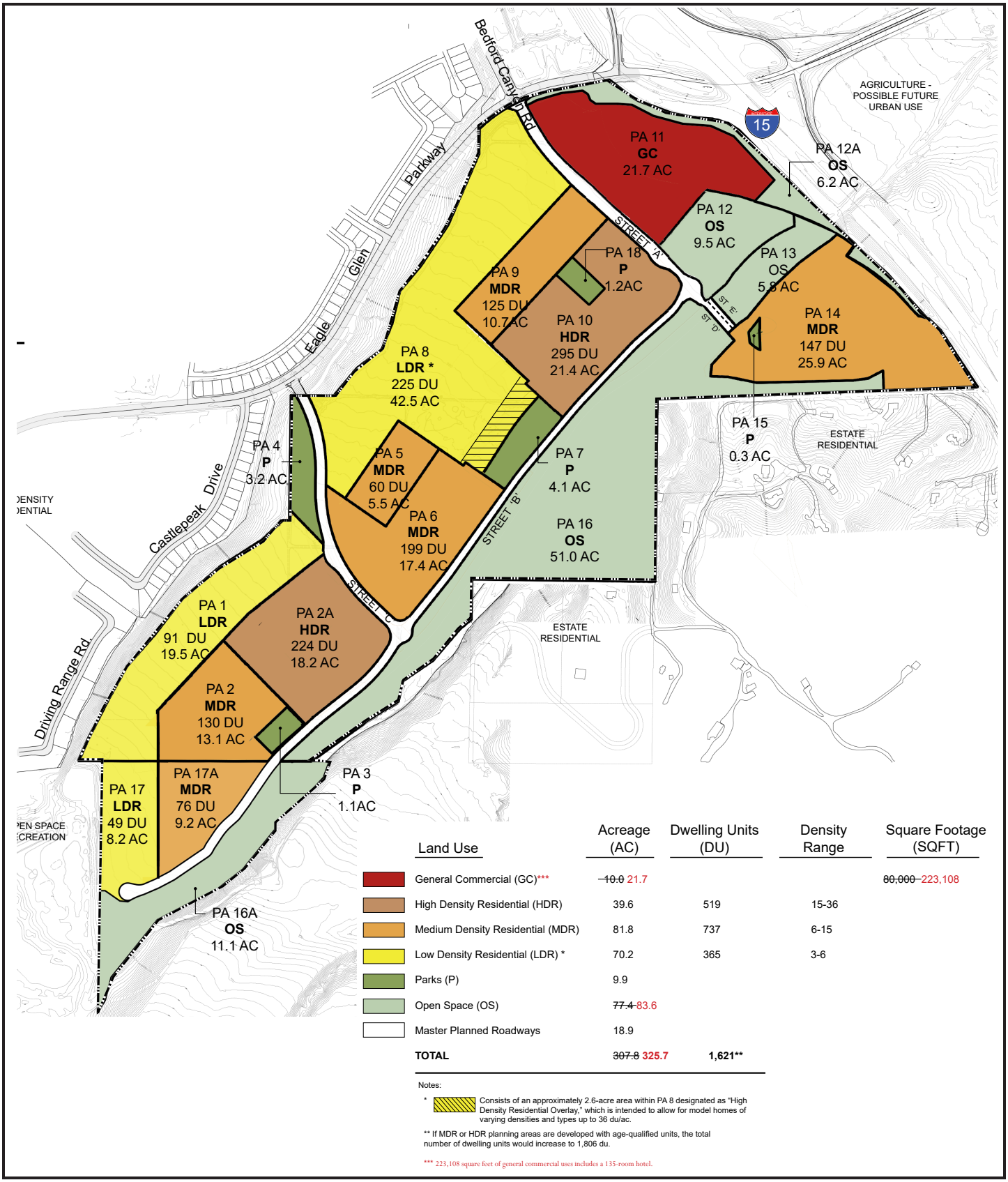
[1] The 223,108 square feet represents the current design of the proposed commercial center and hotel. Minor changes to the design of the center could occur during the entitlement and planning process resulting in minor changes to the square footage of the center. The AHSP has a process to accommodate minor statistical changes without requiring a subsequent Specific Plan Amendment.

- Edits to AHSP Table 6-1 to clarify the application of shared parking and FAR requirements, and minor additional edits to the AHSP for data and text consistency.
- Permit the use of American Farmhouse architecture for the commercial center.

The permitted land use types in the AHSP GC category include retail, restaurants, services, entertainment, lodging and offices plus community services including daycare, emergency medical care and others. The permitted GC land use types would remain unchanged as part of AHSPA No. 3. Planned residential, park, and roadway development quantities/acreages would not be affected by AHSPA No. 3. The resulting land use plan with the incorporation of SPA No. 3 is shown in Figure 2.4.

2.5.3 Parcel Map

The 17.85-acre Modified Project Site is comprised of Assessor's Parcel Numbers 279-240-033 and 279-240-019. The Modified Project includes a request by the project Applicant to subdivide the parcels into five numbered parcels and four lettered lots. Parcels 1 through 5 would be designated for commercial uses while lots A, B, C and D would be designated for open space. The PM is shown in Figure 2.5.



Land Use	Acreage (AC)	Dwelling Units (DU)	Density Range	Square Footage (SQFT)
General Commercial (GC)***	~~10.0~~ 21.7			~~80,000~~ 223,108
High Density Residential (HDR)	39.6	519	15-36	
Medium Density Residential (MDR)	81.8	737	6-15	
Low Density Residential (LDR) *	70.2	365	3-6	
Parks (P)	9.9			
Open Space (OS)	~~77.4~~ 83.6			
Master Planned Roadways	18.9			
TOTAL	~~307.8~~ 325.7	1,621**		

Notes:

* Consists of an approximately 2.6-acre area within PA 8 designated as "High Density Residential Overlay," which is intended to allow for model homes of varying densities and types up to 36 du/ac.

** If MDR or HDR planning areas are developed with age-qualified units, the total number of dwelling units would increase to 1,806 du.

*** 223,108 square feet of general commercial uses includes a 135-room hotel.

enplanners

FIGURE 2.4

N

N.T.S.

Source: Google (2019); KTGY (2019)

Arantine Hills Specific Plan Amendment No. 3
Supplemental EIR No. 2
City of Corona

Proposed Arantine Hills Specific Plan Land Use Plan

This Page Intentionally Left Blank

DPR2019-0020
COMMERCIAL PARCELS

PARCEL MAP NO. 37788
FOR COMMERCIAL PURPOSES

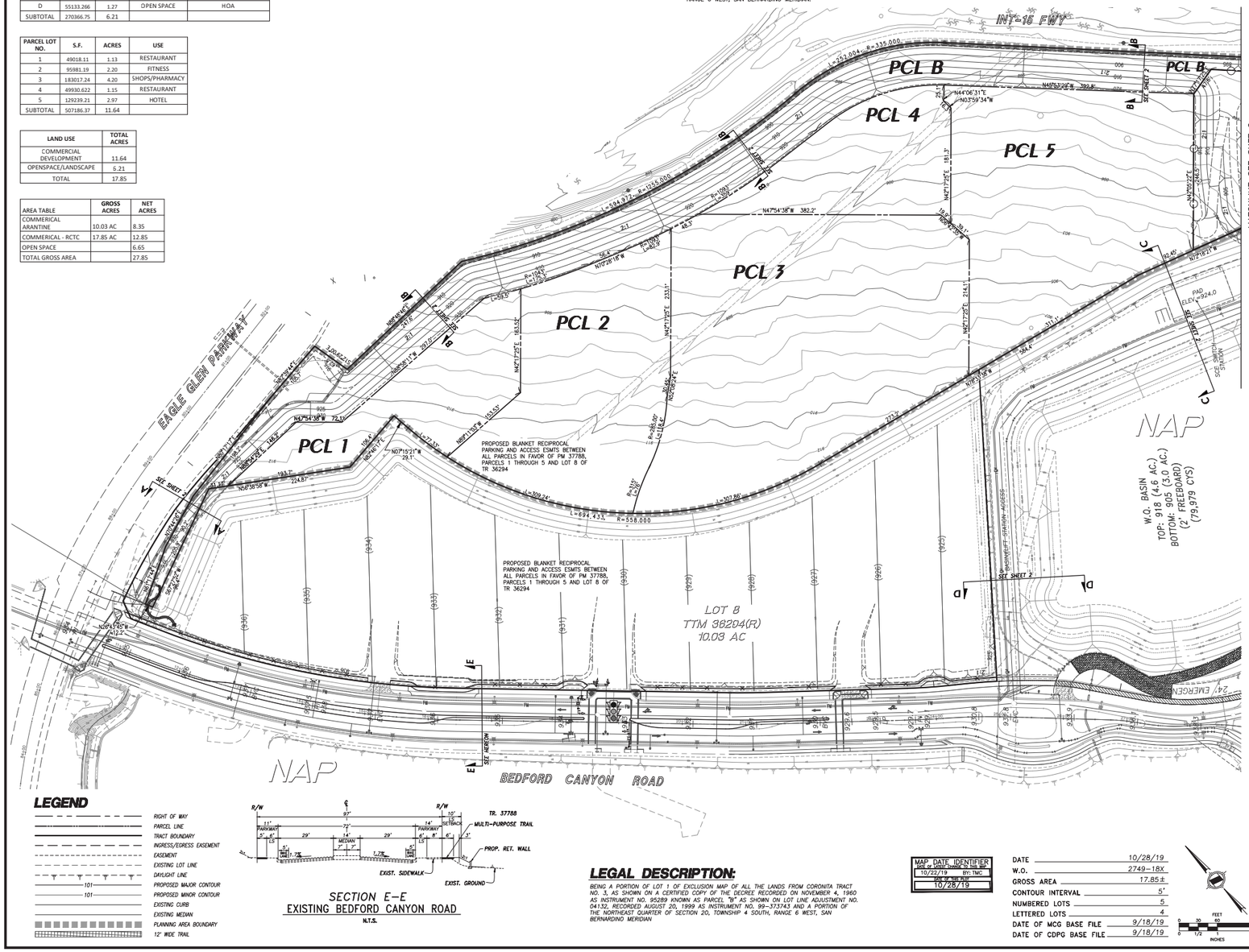
BEING A SURVEY OF PARCEL "A" OF THE LANDS DEED TO RIVERSIDE COUNTY TRANSPORTATION COMMISSION IN A DOCUMENT, RECORDED DECEMBER 26, 2008 AS INSTRUMENT NO. 672262, OFFICIAL RECORDS OF SAID COUNTY, LYING WITHIN PORTIONS OF SECTIONS 16 AND 17. TOWNSHIP 4 SOUTH, RANGE 6 WEST, SAN BERNARDINO MERIDIAN.

LOT NO.	S.F.	ACRES	USE	MAINTAINED
A	77313.74	1.77	BASIN	HOA
B	129101.26	2.96	SLOPE/OPEN SPACE	HOA
C	8818.491	0.20	CHANNEL/RCFD	RCFD
D	55133.266	1.27	OPEN SPACE	HOA
SUBTOTAL	270366.75	6.21		

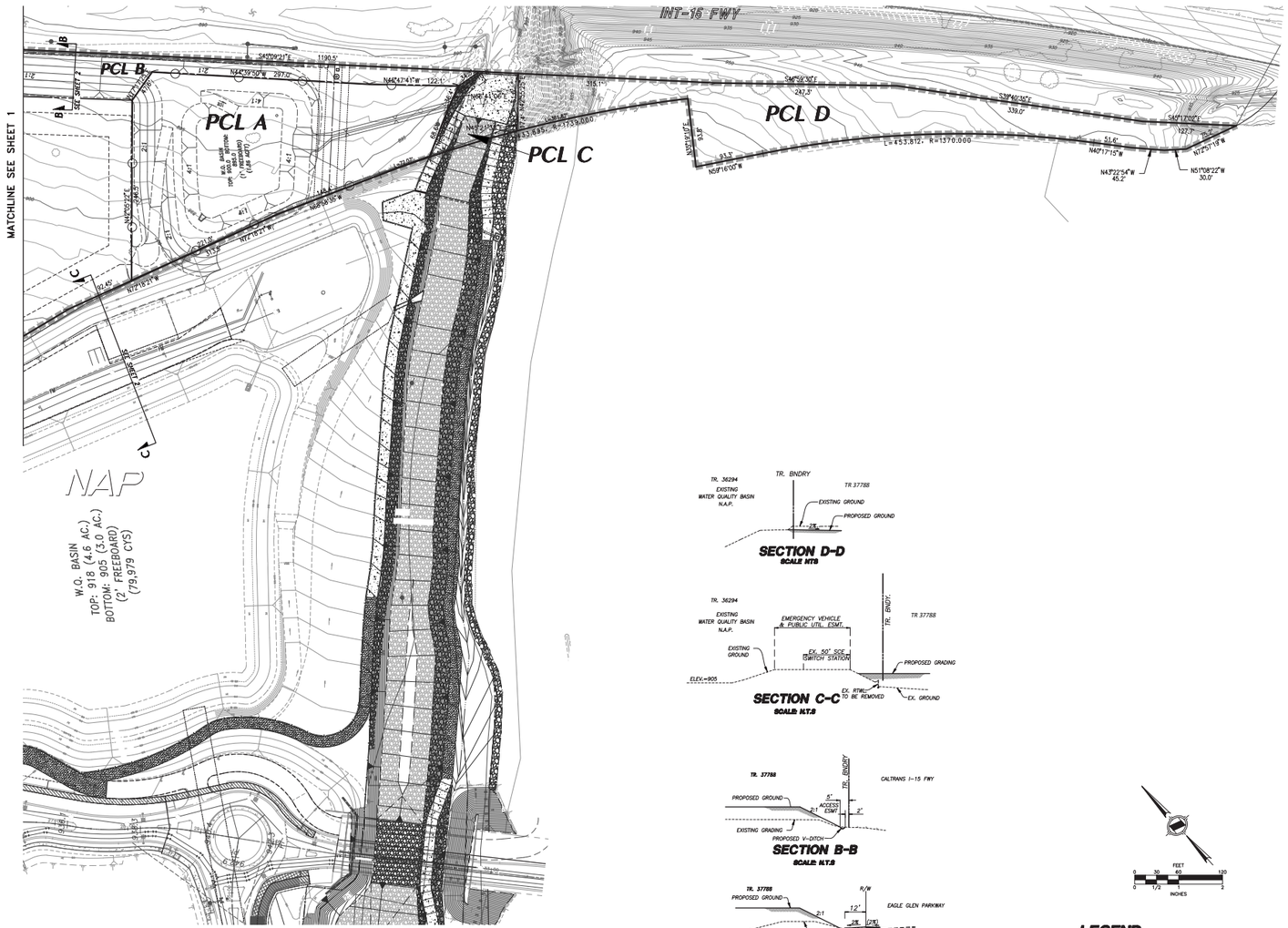
PARCEL LOT NO.	S.F.	ACRES	USE
1	49018.11	1.13	RESTAURANT
2	95981.19	2.20	FITNESS
3	183017.24	4.20	SHOPS/PHARMACY
4	49930.622	1.15	RESTAURANT
5	129239.21	2.97	HOTEL
SUBTOTAL	507186.37	11.64	

LAND USE	TOTAL ACRES
COMMERCIAL DEVELOPMENT	11.64
OPENSPACE/LANDSCAPE	6.21
TOTAL	17.85

AREA TABLE	GROSS ACRES	NET ACRES
COMMERICAL ARANTINE	10.03 AC	8.35
COMMERICAL - RCTC	17.85 AC	12.85
OPEN SPACE		6.65
TOTAL GROSS AREA		27.85


INT-15 FWY
PCL B
PCL 4
PCL 5
PCL 3
PCL 2
PCL 1
EAGLE GLEN PARKWAY
PROPOSED BLANKET RECIPROCAL PARKING AND ACCESS ESMTS BETWEEN ALL PARCELS IN FAVOR OF PM 37788, PARCELS 1 THROUGH 5 AND LOT B OF TR 36294
PROPOSED BLANKET RECIPROCAL PARKING AND ACCESS ESMTS BETWEEN ALL PARCELS IN FAVOR OF PM 37788, PARCELS 1 THROUGH 5 AND LOT B OF TR 36294
LOT B
TTM 36294(R)
10.03 AC
SEE SHEET 2
SEE SHEET 3
SEE SHEET 4
SEE SHEET 5
SEE SHEET 6
SEE SHEET 7
SEE SHEET 8
SEE SHEET 9
SEE SHEET 10
SEE SHEET 11
SEE SHEET 12
SEE SHEET 13
SEE SHEET 14
SEE SHEET 15
SEE SHEET 16
SEE SHEET 17
SEE SHEET 18
SEE SHEET 19
SEE SHEET 20
SEE SHEET 21
SEE SHEET 22
SEE SHEET 23
SEE SHEET 24
SEE SHEET 25
SEE SHEET 26
SEE SHEET 27
SEE SHEET 28
SEE SHEET 29
SEE SHEET 30
SEE SHEET 31
SEE SHEET 32
SEE SHEET 33
SEE SHEET 34
SEE SHEET 35
SEE SHEET 36
SEE SHEET 37
SEE SHEET 38
SEE SHEET 39
SEE SHEET 40
SEE SHEET 41
SEE SHEET 42
SEE SHEET 43
SEE SHEET 44
SEE SHEET 45
SEE SHEET 46
SEE SHEET 47
SEE SHEET 48
SEE SHEET 49
SEE SHEET 50
SEE SHEET 51
SEE SHEET 52
SEE SHEET 53
SEE SHEET 54
SEE SHEET 55
SEE SHEET 56
SEE SHEET 57
SEE SHEET 58
SEE SHEET 59
SEE SHEET 60
SEE SHEET 61
SEE SHEET 62
SEE SHEET 63
SEE SHEET 64
SEE SHEET 65
SEE SHEET 66
SEE SHEET 67
SEE SHEET 68
SEE SHEET 69
SEE SHEET 70
SEE SHEET 71
SEE SHEET 72
SEE SHEET 73
SEE SHEET 74
SEE SHEET 75
SEE SHEET 76
SEE SHEET 77
SEE SHEET 78
SEE SHEET 79
SEE SHEET 80
SEE SHEET 81
SEE SHEET 82
SEE SHEET 83
SEE SHEET 84
SEE SHEET 85
SEE SHEET 86
SEE SHEET 87
SEE SHEET 88
SEE SHEET 89
SEE SHEET 90
SEE SHEET 91
SEE SHEET 92
SEE SHEET 93
SEE SHEET 94
SEE SHEET 95
SEE SHEET 96
SEE SHEET 97
SEE SHEET 98
SEE SHEET 99
SEE SHEET 100
SEE SHEET 101
SEE SHEET 102
SEE SHEET 103
SEE SHEET 104
SEE SHEET 105
SEE SHEET 106
SEE SHEET 107
SEE SHEET 108
SEE SHEET 109
SEE SHEET 110
SEE SHEET 111
SEE SHEET 112
SEE SHEET 113
SEE SHEET 114
SEE SHEET 115
SEE SHEET 116
SEE SHEET 117
SEE SHEET 118
SEE SHEET 119
SEE SHEET 120
SEE SHEET 121
SEE SHEET 122
SEE SHEET 123
SEE SHEET 124
SEE SHEET 125
SEE SHEET 126
SEE SHEET 127
SEE SHEET 128
SEE SHEET 129
SEE SHEET 130
SEE SHEET 131
SEE SHEET 132
SEE SHEET 133
SEE SHEET 134
SEE SHEET 135
SEE SHEET 136
SEE SHEET 137
SEE SHEET 138
SEE SHEET 139
SEE SHEET 140
SEE SHEET 141
SEE SHEET 142
SEE SHEET 143
SEE SHEET 144
SEE SHEET 145
SEE SHEET 146
SEE SHEET 147
SEE SHEET 148
SEE SHEET 149
SEE SHEET 150
SEE SHEET 151
SEE SHEET 152
SEE SHEET 153
SEE SHEET 154
SEE SHEET 155
SEE SHEET 156
SEE SHEET 157
SEE SHEET 158
SEE SHEET 159
SEE SHEET 160
SEE SHEET 161
SEE SHEET 162
SEE SHEET 163
SEE SHEET 164
SEE SHEET 165
SEE SHEET 166
SEE SHEET 167
SEE SHEET 168
SEE SHEET 169
SEE SHEET 170
SEE SHEET 171
SEE SHEET 172
SEE SHEET 173
SEE SHEET 174
SEE SHEET 175
SEE SHEET 176
SEE SHEET 177
SEE SHEET 178
SEE SHEET 179
SEE SHEET 180
SEE SHEET 181
SEE SHEET 182
SEE SHEET 183
SEE SHEET 184
SEE SHEET 185
SEE SHEET 186
SEE SHEET 187
SEE SHEET 188
SEE SHEET 189
SEE SHEET 190
SEE SHEET 191
SEE SHEET 192
SEE SHEET 193
SEE SHEET 194
SEE SHEET 195
SEE SHEET 196
SEE SHEET 197
SEE SHEET 198
SEE SHEET 199
SEE SHEET 200
SEE SHEET 201
SEE SHEET 202
SEE SHEET 203
SEE SHEET 204
SEE SHEET 205
SEE SHEET 206
SEE SHEET 207
SEE SHEET 208
SEE SHEET 209
SEE SHEET 210
SEE SHEET 211
SEE SHEET 212
SEE SHEET 213
SEE SHEET 214
SEE SHEET 215
SEE SHEET 216
SEE SHEET 217
SEE SHEET 218
SEE SHEET 219
SEE SHEET 220
SEE SHEET 221
SEE SHEET 222
SEE SHEET 223
SEE SHEET 224
SEE SHEET 225
SEE SHEET 226
SEE SHEET 227
SEE SHEET 228
SEE SHEET 229
SEE SHEET 230
SEE SHEET 231
SEE SHEET 232
SEE SHEET 233
SEE SHEET 234
SEE SHEET 235
SEE SHEET 236
SEE SHEET 237
SEE SHEET 238
SEE SHEET 239
SEE SHEET 240
SEE SHEET 241
SEE SHEET 242
SEE SHEET 243
SEE SHEET 244
SEE SHEET 245
SEE SHEET 246
SEE SHEET 247
SEE SHEET 248
SEE SHEET 249
SEE SHEET 250
SEE SHEET 251
SEE SHEET 252
SEE SHEET 253
SEE SHEET 254
SEE SHEET 255
SEE SHEET 256
SEE SHEET 257
SEE SHEET 258
SEE SHEET 259
SEE SHEET 260
SEE SHEET 261
SEE SHEET 262
SEE SHEET 263
SEE SHEET 264
SEE SHEET 265
SEE SHEET 266
SEE SHEET 267
SEE SHEET 268
SEE SHEET 269
SEE SHEET 270
SEE SHEET 271
SEE SHEET 272
SEE SHEET 273
SEE SHEET 274
SEE SHEET 275
SEE SHEET 276
SEE SHEET 277
SEE SHEET 278
SEE SHEET 279
SEE SHEET 280
SEE SHEET 281
SEE SHEET 282
SEE SHEET 283
SEE SHEET 284
SEE SHEET 285
SEE SHEET 286
SEE SHEET 287
SEE SHEET 288
SEE SHEET 289
SEE SHEET 290
SEE SHEET 291
SEE SHEET 292
SEE SHEET 293
SEE SHEET 294
SEE SHEET 295
SEE SHEET 296
SEE SHEET 297
SEE SHEET 298
SEE SHEET 299
SEE SHEET 300
SEE SHEET 301
SEE SHEET 302
SEE SHEET 303
SEE SHEET 304
SEE SHEET 305
SEE SHEET 306
SEE SHEET 307
SEE SHEET 308
SEE SHEET 309
SEE SHEET 310
SEE SHEET 311
SEE SHEET 312
SEE SHEET 313
SEE SHEET 314
SEE SHEET 315
SEE SHEET 316
SEE SHEET 317
SEE SHEET 318
SEE SHEET 319
SEE SHEET 320
SEE SHEET 321
SEE SHEET 322
SEE SHEET 323
SEE SHEET 324
SEE SHEET 325
SEE SHEET 326
SEE SHEET 327
SEE SHEET 328
SEE SHEET 329
SEE SHEET 330
SEE SHEET 331
SEE SHEET 332
SEE SHEET 333
SEE SHEET 334
SEE SHEET 335
SEE SHEET 336
SEE SHEET 337
SEE SHEET 338
SEE SHEET 339
SEE SHEET 340
SEE SHEET 341
SEE SHEET 342
SEE SHEET 343
SEE SHEET 344
SEE SHEET 345
SEE SHEET 346
SEE SHEET 347
SEE SHEET 348
SEE SHEET 349
SEE SHEET 350
SEE SHEET 351
SEE SHEET 352
SEE SHEET 353
SEE SHEET 354
SEE SHEET 355
SEE SHEET 356
SEE SHEET 357
SEE SHEET 358
SEE SHEET 359
SEE SHEET 360
SEE SHEET 361
SEE SHEET 362
SEE SHEET 363
SEE SHEET 364
SEE SHEET 365
SEE SHEET 366
SEE SHEET 367
SEE SHEET 368
SEE SHEET 369
SEE SHEET 370
SEE SHEET 371
SEE SHEET 372
SEE SHEET 373
SEE SHEET 374
SEE SHEET 375
SEE SHEET 376
SEE SHEET 377
SEE SHEET 378
SEE SHEET 379
SEE SHEET 380
SEE SHEET 381
SEE SHEET 382
SEE SHEET 383
SEE SHEET 384
SEE SHEET 385
SEE SHEET 386
SEE SHEET 387
SEE SHEET 388
SEE SHEET 389
SEE SHEET 390
SEE SHEET 391
SEE SHEET 392
SEE SHEET 393
SEE SHEET 394
SEE SHEET 395
SEE SHEET 396
SEE SHEET 397
SEE SHEET 398
SEE SHEET 399
SEE SHEET 400
SEE SHEET 401
SEE SHEET 402
SEE SHEET 403
SEE SHEET 404
SEE SHEET 405
SEE SHEET 406
SEE SHEET 407
SEE SHEET 408
SEE SHEET 409
SEE SHEET 410
SEE SHEET 411
SEE SHEET 412
SEE SHEET 413
SEE SHEET 414
SEE SHEET 415
SEE SHEET 416
SEE SHEET 417
SEE SHEET 418
SEE SHEET 419
SEE SHEET 420
SEE SHEET 421
SEE SHEET 422
SEE SHEET 423
SEE SHEET 424
SEE SHEET 425
SEE SHEET 426
SEE SHEET 427
SEE SHEET 428
SEE SHEET 429
SEE SHEET 430
SEE SHEET 431
SEE SHEET 432
SEE SHEET 433
SEE SHEET 434
SEE SHEET 435
SEE SHEET 436
SEE SHEET 437
SEE SHEET 438
SEE SHEET 439
SEE SHEET 440
SEE SHEET 441
SEE SHEET 442
SEE SHEET 443
SEE SHEET 444
SEE SHEET 445
SEE SHEET 446
SEE SHEET 447
SEE SHEET 448
SEE SHEET 449
SEE SHEET 450
SEE SHEET 451
SEE SHEET 452
SEE SHEET 453
SEE SHEET 454
SEE SHEET 455
SEE SHEET 456
SEE SHEET 457
SEE SHEET 458
SEE SHEET 459
SEE SHEET 460
SEE SHEET 461
SEE SHEET 462
SEE SHEET 463
SEE SHEET 464
SEE SHEET 465
SEE SHEET 466
SEE SHEET 467
SEE SHEET 468
SEE SHEET 469
SEE SHEET 470
SEE SHEET 471
SEE SHEET 472
SEE SHEET 473
SEE SHEET 474
SEE SHEET 475
SEE SHEET 476
SEE SHEET 477
SEE SHEET 478
SEE SHEET 479
SEE SHEET 480
SEE SHEET 481
SEE SHEET 482
SEE SHEET 483
SEE SHEET 484
SEE SHEET 485
SEE SHEET 486
SEE SHEET 487
SEE SHEET 488
SEE SHEET 489
SEE SHEET 490
SEE SHEET 491
SEE SHEET 492
SEE SHEET 493
SEE SHEET 494
SEE SHEET 495
SEE SHEET 496
SEE SHEET 497
SEE SHEET 498
SEE SHEET 499
SEE SHEET 500
SEE SHEET 501
SEE SHEET 502
SEE SHEET 503
SEE SHEET 504
SEE SHEET 505
SEE SHEET 506
SEE SHEET 507
SEE SHEET 508
SEE SHEET 509
SEE SHEET 510
SEE SHEET 511
SEE SHEET 512
SEE SHEET 513
SEE SHEET 514
SEE SHEET 515
SEE SHEET 516
SEE SHEET 517
SEE SHEET 518
SEE SHEET 519
SEE SHEET 520
SEE SHEET 521
SEE SHEET 522
SEE SHEET 523
SEE SHEET 524
SEE SHEET 525
SEE SHEET 526
SEE SHEET 527
SEE SHEET 528
SEE SHEET 529
SEE SHEET 530
SEE SHEET 531
SEE SHEET 532
SEE SHEET 533
SEE SHEET 534
SEE SHEET 535
SEE SHEET 536
SEE SHEET 537
SEE SHEET 538
SEE SHEET 539
SEE SHEET 540
SEE SHEET 541
SEE SHEET 542
SEE SHEET 543
SEE SHEET 544
SEE SHEET 545
SEE SHEET 546
SEE SHEET 547
SEE SHEET 548
SEE SHEET 549
SEE SHEET 550
SEE SHEET 551
SEE SHEET 552
SEE SHEET 553
SEE SHEET 554
SEE SHEET 555
SEE SHEET 556
SEE SHEET 557
SEE SHEET 558
SEE SHEET 559
SEE SHEET 560
SEE SHEET 561
SEE SHEET 562
SEE SHEET 563
SEE SHEET 564
SEE SHEET 565
SEE SHEET 566
SEE SHEET 567
SEE SHEET 568
SEE SHEET 569
SEE SHEET 570
SEE SHEET 571
SEE SHEET 572
SEE SHEET 573
SEE SHEET 574
SEE SHEET 575
SEE SHEET 576
SEE SHEET 577
SEE SHEET 578
SEE SHEET 579
SEE SHEET 580
SEE SHEET 581
SEE SHEET 582
SEE SHEET 583
SEE SHEET 584
SEE SHEET 585
SEE SHEET 586
SEE SHEET 587
SEE SHEET 588
SEE SHEET 589
SEE SHEET 590
SEE SHEET 591
SEE SHEET 592
SEE SHEET 593
SEE SHEET 594
SEE SHEET 595
SEE SHEET 596
SEE SHEET 597
SEE SHEET 598
SEE SHEET 599
SEE SHEET 600
SEE SHEET 601
SEE SHEET 602
SEE SHEET 603
SEE SHEET 604
SEE SHEET 605
SEE SHEET 606
SEE SHEET 607
SEE SHEET 608
SEE SHEET 609
SEE SHEET 610
SEE SHEET 611
SEE SHEET 612
SEE SHEET 613
SEE SHEET 614
SEE SHEET 615
SEE SHEET 616
SEE SHEET 617
SEE SHEET 618
SEE SHEET 619
SEE SHEET 620
SEE SHEET 621
SEE SHEET 622
SEE SHEET 623
SEE SHEET 624
SEE SHEET 625
SEE SHEET 626
SEE SHEET 627
SEE SHEET 628
SEE SHEET 629
SEE SHEET 630
SEE SHEET 631
SEE SHEET 632
SEE SHEET 633
SEE SHEET 634
SEE SHEET 635
SEE SHEET 636
SEE SHEET 637
SEE SHEET 638
SEE SHEET 639
SEE SHEET 640
SEE SHEET 641
SEE SHEET 642
SEE SHEET 643
SEE SHEET 644
SEE SHEET 645
SEE SHEET 646
SEE SHEET 647
SEE SHEET 648
SEE SHEET 649
SEE SHEET 650
SEE SHEET 651
SEE SHEET 652
SEE SHEET 653
SEE SHEET 654
SEE SHEET 655
SEE SHEET 656
SEE SHEET 657
SEE SHEET 658
SEE SHEET 659
SEE SHEET 660
SEE SHEET 661
SEE SHEET 662
SEE SHEET 663
SEE SHEET 664
SEE SHEET 665
SEE SHEET 666
SEE SHEET 667
SEE SHEET 668
SEE SHEET 669
SEE SHEET 670
SEE SHEET 671
SEE SHEET 672
SEE SHEET 673
SEE SHEET 674
SEE SHEET 675
SEE SHEET 676
SEE SHEET 677
SEE SHEET 678
SEE SHEET 679
SEE SHEET 680
SEE SHEET 681
SEE SHEET 682
SEE SHEET 683
SEE SHEET 684
SEE SHEET 685
SEE SHEET 686
SEE SHEET 687
SEE SHEET 688
SEE SHEET 689
SEE SHEET 690
SEE SHEET 691
SEE SHEET 692
SEE SHEET 693
SEE SHEET 694
SEE SHEET 695
SEE SHEET 696
SEE SHEET 697
SEE SHEET 698
SEE SHEET 699
SEE SHEET 700
SEE SHEET 701
SEE SHEET 702
SEE SHEET 703
SEE SHEET 704
SEE SHEET 705
SEE SHEET 706
SEE SHEET 707
SEE SHEET 708
SEE SHEET 709
SEE SHEET 710
SEE SHEET 711
SEE SHEET 712
SEE SHEET 713
SEE SHEET 714
SEE SHEET 715
SEE SHEET 716
SEE SHEET 717
SEE SHEET 718
SEE SHEET 719
SEE SHEET 720
SEE SHEET 721
SEE SHEET 722
SEE SHEET 723
SEE SHEET 724
SEE SHEET 725
SEE SHEET 726
SEE SHEET 727
SEE SHEET 728
SEE SHEET 729
SEE SHEET 730
SEE SHEET 731
SEE SHEET 732
SEE SHEET 733
SEE SHEET 734
SEE SHEET 735
SEE SHEET 736
SEE SHEET 737
SEE SHEET 738
SEE SHEET 739
SEE SHEET 740
SEE SHEET 741
SEE SHEET 742
SEE SHEET 743
SEE SHEET 744
SEE SHEET 745
SEE SHEET 746
SEE SHEET 747
SEE SHEET 748
SEE SHEET 749
SEE SHEET 750
SEE SHEET 751
SEE SHEET 752
SEE SHEET 753
SEE SHEET 754
SEE SHEET 755
SEE SHEET 756
SEE SHEET 757
SEE SHEET 758
SEE SHEET 759
SEE SHEET 760
SEE SHEET 761
SEE SHEET 762
SEE SHEET 763
SEE SHEET 764
SEE SHEET 765
SEE SHEET 766
SEE SHEET 767
SEE SHEET 768
SEE SHEET 769
SEE SHEET 770
SEE SHEET 771
SEE SHEET 772
SEE SHEET 773
SEE SHEET 774
SEE SHEET 775
SEE SHEET 776
SEE SHEET 777
SEE SHEET 778
SEE SHEET 779
SEE SHEET 780
SEE SHEET 781
SEE SHEET 782
SEE SHEET 783
SEE SHEET 784
SEE SHEET 785
SEE SHEET 786
SEE SHEET 787
SEE SHEET 788
SEE SHEET 789
SEE SHEET 790
SEE SHEET 791
SEE SHEET 792
SEE SHEET 793
SEE SHEET 794
SEE SHEET 795
SEE SHEET 796
SEE SHEET 797
SEE SHEET 798
SEE SHEET 799
SEE SHEET 800
SEE SHEET 801
SEE SHEET 802
SEE SHEET 803
SEE SHEET 804
SEE SHEET 805
SEE SHEET 806
SEE SHEET 807
SEE SHEET 808
SEE SHEET 809
SEE SHEET 810
SEE SHEET 811
SEE SHEET 812
SEE SHEET 813
SEE SHEET 814
SEE SHEET 815
SEE SHEET 816
SEE SHEET 817
SEE SHEET 818
SEE SHEET 819
SEE SHEET 820
SEE SHEET 821
SEE SHEET 822
SEE SHEET 823
SEE SHEET 824
SEE SHEET 825
SEE SHEET 826
SEE SHEET 827
SEE SHEET 828
SEE SHEET 829
SEE SHEET 830
SEE SHEET 831
SEE SHEET 832
SEE SHEET 833
SEE SHEET 834
SEE SHEET 835
SEE SHEET 836
SEE SHEET 837
SEE SHEET 838
SEE SHEET 839
SEE SHEET 840
SEE SHEET 841
SEE SHEET 842
SEE SHEET 843
SEE SHEET 844
SEE SHEET 845
SEE SHEET 846
SEE SHEET 847
SEE SHEET 848
SEE SHEET 849
SEE SHEET 850
SEE SHEET 851
SEE SHEET 852
SEE SHEET 853
SEE SHEET 854
SEE SHEET 855
SEE SHEET 856
SEE SHEET 857
SEE SHEET 858
SEE SHEET 859
SEE SHEET 860
SEE SHEET 861
SEE SHEET 862
SEE SHEET 863
SEE SHEET 864
SEE SHEET 865
SEE SHEET 866
SEE SHEET 867
SEE SHEET 868
SEE SHEET 869
SEE SHEET 870
SEE SHEET 871
SEE SHEET 872
SEE SHEET 873
SEE SHEET 874
SEE SHEET 875
SEE SHEET 876
SEE SHEET 877
SEE SHEET 878
SEE SHEET 879
SEE SHEET 880
SEE SHEET 881
SEE SHEET 882
SEE SHEET 883
SEE SHEET 884
SEE SHEET 885
SEE SHEET 886
SEE SHEET 887
SEE SHEET 888
SEE SHEET 889
SEE SHEET 890
SEE SHEET 891
SEE SHEET 892
SEE SHEET 893
SEE SHEET 894
SEE SHEET 895
SEE SHEET 896
SEE SHEET 897
SEE SHEET 898
SEE SHEET 899
SEE SHEET 900
SEE SHEET 901
SEE SHEET 902
SEE SHEET 903
SEE SHEET 904
SEE SHEET 905
SEE SHEET 906
SEE SHEET 907
SEE SHEET 908
SEE SHEET 909
SEE SHEET 910
SEE SHEET 911
SEE SHEET 912
SEE SHEET 913
SEE SHEET 914
SEE SHEET 915
SEE SHEET 916
SEE SHEET 917
SEE SHEET 918
SEE SHEET 919
SEE SHEET 920
SEE SHEET 921
SEE SHEET 922
SEE SHEET 923
SEE SHEET 924
SEE SHEET 925
SEE SHEET 926
SEE SHEET 927
SEE SHEET 928
SEE SHEET 929
SEE SHEET 930
SEE SHEET 931
SEE SHEET 932
SEE SHEET 933
SEE SHEET 934
SEE SHEET 935
SEE SHEET 936
SEE SHEET 937
SEE SHEET 938
SEE SHEET 939
SEE SHEET 940
SEE SHEET 941
SEE SHEET 942
SEE SHEET 943
SEE SHEET 944
SEE SHEET 945
SEE SHEET 946
SEE SHEET 947
SEE SHEET 948
SEE SHEET 949
SEE SHEET 950
SEE SHEET 951
SEE SHEET 952
SEE SHEET 953
SEE SHEET 954
SEE SHEET 955
SEE SHEET 956
SEE SHEET 957
SEE SHEET 958
SEE SHEET 959
SEE SHEET 960
SEE SHEET 961
SEE SHEET 962
SEE SHEET 963
SEE SHEET 964
SEE SHEET 965
SEE SHEET 966
SEE SHEET 967
SEE SHEET 968
SEE SHEET 969
SEE SHEET 970
SEE SHEET 971
SEE SHEET 972
SEE SHEET 973
SEE SHEET 974
SEE SHEET 975
SEE SHEET 976
SEE SHEET 977
SEE SHEET 978
SEE SHEET 979
SEE SHEET 980
SEE SHEET 981
SEE SHEET 982
SEE SHEET 983
SEE SHEET 984
SEE SHEET 985
SEE SHEET 986
SEE SHEET 987
SEE SHEET 988
SEE SHEET 989
SEE SHEET 990
SEE SHEET 991
SEE SHEET 992
SEE SHEET 993
SEE SHEET 994
SEE SHEET 995
SEE SHEET 996
SEE SHEET 997
SEE SHEET 998
SEE SHEET 999
SEE SHEET 1000
SEE SHEET 1001
SEE SHEET 1002
SEE SHEET 1003
SEE SHEET 1004
SEE SHEET 1005
SEE SHEET 1006
SEE SHEET 1007
SEE SHEET 1008
SEE SHEET 1009
SEE SHEET 1010
SEE SHEET 1011
SEE SHEET 1012
SEE SHEET 1013
SEE SHEET 1014
SEE SHEET 1015
SEE SHEET 1016
SEE SHEET 1017
SEE SHEET 1018
SEE SHEET 1019
SEE SHEET 1020
SEE SHEET 1021
SEE SHEET 1022
SEE SHEET 1023
SEE SHEET 1024
SEE SHEET 1025
SEE SHEET 1026
SEE SHEET 1027
SEE SHEET 1028
SEE SHEET 1029
SEE SHEET 1030
SEE SHEET 1031
SEE SHEET 1032
SEE SHEET 1033
SEE SHEET 1034
SEE SHEET 1035
SEE SHEET 1036
SEE SHEET 1037
SEE SHEET 1038
SEE SHEET 1039
SEE SHEET 1040
SEE SHEET 1041
SEE SHEET 1042
SEE SHEET 1043
SEE SHEET 1044
SEE SHEET 1045
SEE SHEET 1046
SEE SHEET 1047
SEE SHEET 1048
SEE SHEET 1049
SEE SHEET 1050
SEE SHEET 1051
SEE SHEET 1052
SEE SHEET 1053
SEE SHEET 1054
SEE SHEET 1055
SEE SHEET 1056
SEE SHEET 1057
SEE SHEET 1058
SEE SHEET 1059
SEE SHEET 1060
SEE SHEET 1061
SEE SHEET 1062
SEE SHEET 1063
SEE SHEET 1064
SEE SHEET 1065
SEE SHEET 1066
SEE SHEET 1067
SEE SHEET 1068
SEE SHEET 1069
SEE SHEET 1070
SEE SHEET 1071
SEE SHEET 1072
SEE SHEET 1073
SEE SHEET 1074
SEE SHEET 1075
SEE SHEET 1076
SEE SHEET 1077
SEE SHEET 1078
SEE SHEET 1079
SEE SHEET 1080
SEE SHEET 1081
SEE SHEET 1082
SEE SHEET 1083
SEE SHEET 1084
SEE SHEET 1085
SEE SHEET 1086
SEE SHEET 1087
SEE SHEET 1088
SEE SHEET 1089
SEE SHEET 1090
SEE SHEET 1091
SEE SHEET 1092
SEE SHEET 1093
SEE SHEET 1094
SEE SHEET 1095
SEE SHEET 1096
SEE SHEET 1097
SEE SHEET 1098
SEE SHEET 1099
SEE SHEET 1100
SEE SHEET 1101
SEE SHEET 1102
SEE SHEET 1103
SEE SHEET 1104
SEE SHEET 1105
SEE SHEET 1106
SEE SHEET 1107
SEE SHEET 1108
SEE SHEET 1109
SEE SHEET 1110
SEE SHEET 1111
SEE SHEET 1112
SEE SHEET 1113
SEE SHEET 1114
SEE SHEET 1115
SEE SHEET 1116
SEE SHEET 1117
SEE SHEET 1118
SEE SHEET 1119
SEE SHEET 1120
SEE SHEET 1121
SEE SHEET 1122
SEE SHEET 1123
SEE SHEET 1124
SEE SHEET 1125
SEE SHEET 1126
SEE SHEET 1127
SEE SHEET 1128
SEE SHEET 1129
SEE SHEET 1130
SEE SHEET 1131
SEE SHEET 1132
SEE SHEET 1133
SEE SHEET 1134
SEE SHEET 1135
SEE SHEET 1136
SEE SHEET 1137
SEE SHEET 1138
SEE SHEET 1139
SEE SHEET 1140
SEE SHEET 1141
SEE SHEET 1142
SEE SHEET 1143
SEE SHEET 1144
SEE SHEET 1145
SEE SHEET 1146
SEE SHEET 1147
SEE SHEET 1148
SEE SHEET 1149
SEE SHEET 1150
SEE SHEET 1151
SEE SHEET 1152
SEE SHEET 1153
SEE SHEET 1154
SEE SHEET 1155
SEE SHEET 1156
SEE SHEET 1157
SEE SHEET 1158
SEE SHEET 1159
SEE SHEET 1160
SEE SHEET 1161
SEE SHEET 1162
SEE SHEET 1163
SEE SHEET 1164
SEE SHEET 1165
SEE SHEET 1166
SEE SHEET 1167
SEE SHEET 1168
SEE SHEET 1169
SEE SHEET 1170
SEE SHEET 1171
SEE SHEET 1172
SEE SHEET 1173
SEE SHEET 1174
SEE SHEET 1175
SEE SHEET 1176
SEE SHEET 1177
SEE SHEET 1178
SEE SHEET 1179
SEE SHEET 1180
SEE SHEET 1181
SEE SHEET 1182
SEE SHEET 1183
SEE SHEET 1184
SEE SHEET 1185
SEE SHEET 1186
SEE SHEET 1187
SEE SHEET 1188
SEE SHEET 1189
SEE SHEET 1190
SEE SHEET 1191
SEE SHEET 1192
SEE SHEET 1193
SEE SHEET 1194
SEE SHEET 1195
SEE SHEET 1196
SEE SHEET 1197
SEE SHEET 1198
SEE SHEET 1199
SEE SHEET 1200
SEE SHEET 1201
SEE SHEET 1202
SEE SHEET 1203
SEE SHEET 1204
SEE SHEET 1205
SEE SHEET 1206
SEE SHEET 1207
SEE SHEET 1208
SEE SHEET 1209
SEE SHEET 1210
SEE SHEET 1211
SEE SHEET 1212
SEE SHEET 1213
SEE SHEET 1214
SEE SHEET 1215
SEE SHEET 1216
SEE SHEET 1217
SEE SHEET 1218
SEE SHEET 1219
SEE SHEET 1220
SEE SHEET 1221
SEE SHEET 1222
SEE SHEET 1223
SEE SHEET 1224
SEE SHEET 1225
SEE SHEET 1226
SEE SHEET 1227
SEE SHEET 1228
SEE SHEET 1229
SEE SHEET 1230
SEE SHEET 1231
SEE SHEET 1232
SEE SHEET 1233
SEE SHEET 1234
SEE SHEET 1235
SEE SHEET 1236
SEE SHEET 1237
SEE SHEET 1238
SEE SHEET 1239
SEE SHEET 1240
SEE SHEET 1241
SEE SHEET 1242
SEE SHEET 1243
SEE SHEET 1244
SEE SHEET 1245
SEE SHEET 1246
SEE SHEET 1247
SEE SHEET 1248
SEE SHEET 1249
SEE SHEET 1250
SEE SHEET 1251
SEE SHEET 1252
SEE SHEET 1253
SEE SHEET 1254
SEE SHEET 1255
SEE SHEET 1256
SEE SHEET 1257
SEE SHEET 1258
SEE SHEET 1259
SEE SHEET 1260
SEE SHEET 1261
SEE SHEET 1262
SEE SHEET 1263
SEE SHEET 1264
SEE SHEET 1265
SEE SHEET 1266
SEE SHEET 1267
SEE SHEET 1268
SEE SHEET 1269
SEE SHEET 1270
SEE SHEET 1271
SEE SHEET 1272
SEE SHEET 1273
SEE SHEET 1274
SEE SHEET 1275
SEE SHEET 1276
SEE SHEET 1277
SEE SHEET 1278
SEE SHEET 1279
SEE SHEET 1280
SEE SHEET 1281
SEE SHEET 1282
SEE SHEET 1283
SEE SHEET 1284
SEE SHEET 1285
SEE SHEET 1286
SEE SHEET 1287
SEE SHEET 1288
SEE SHEET 1289
SEE SHEET 1290
SEE SHEET 1291
SEE SHEET 1292
SEE SHEET 1293
SEE SHEET 1294
SEE SHEET 1295
SEE SHEET 1296
SEE SHEET 1297
SEE SHEET 1298
SEE SHEET 1299
SEE SHEET 1300
SEE SHEET 1301
SEE SHEET 1302
SEE SHEET 1303
SEE SHEET 1304
SEE SHEET 1305
SEE SHEET 1306
SEE SHEET 1307
SEE SHEET 1308
SEE SHEET 1309
SEE SHEET 1310
SEE SHEET 1311
SEE SHEET 1312
SEE SHEET 1313
SEE SHEET 1314
SEE SHEET 1315
SEE SHEET 1316
SEE SHEET 1317
SEE SHEET 1318
SEE SHEET 1319
SEE SHEET 1320
SEE SHEET 1321
SEE SHEET 1322
SEE SHEET 1323
SEE SHEET 1324
SEE SHEET 1325
SEE SHEET 1326
SEE SHEET 1327
SEE SHEET 1328
SEE SHEET 1329
SEE SHEET 1330
SEE SHEET 1331
SEE SHEET 1332
SEE SHEET 1333
SEE SHEET 1334
SEE SHEET 1335
SEE SHEET 1336
SEE SHEET 1337
SEE SHEET 1338
SEE SHEET 1339
SEE SHEET 1340
SEE SHEET 1341
SEE SHEET 1342
SEE SHEET 1343
SEE SHEET 1344
SEE SHEET 1345
SEE SHEET 1346
SEE SHEET 1347
SEE SHEET 1348
SEE SHEET 1349
SEE SHEET 1350
SEE SHEET 1351
SEE SHEET 1352
SEE SHEET 1353
SEE SHEET 1354
SEE SHEET 1355
SEE SHEET 1356
SEE SHEET 1357
SEE SHEET 1358
SEE SHEET 1359
SEE SHEET 1360
SEE SHEET 1361
SEE SHEET 1362
SEE SHEET 1363
SEE SHEET 1364
SEE SHEET 1365
SEE SHEET 1366
SEE SHEET 1367
SEE SHEET 1368
SEE SHEET 1369
SEE SHEET 1370
SEE SHEET 1371
SEE SHEET 1372
SEE SHEET 1373
SEE SHEET 1374
SEE SHEET 1375
SEE SHEET 1376
SEE SHEET 1377
SEE SHEET 1378
SEE SHEET 1379
SEE SHEET 1380
SEE SHEET 1381
SEE SHEET 1382
SEE SHEET 1383
SEE SHEET 1384
SEE SHEET 1385
SEE SHEET 1386
SEE SHEET 1387
SEE SHEET 1388
SEE SHEET 1389
SEE SHEET 1390
SEE SHEET 1391
SEE SHEET 1392
SEE SHEET 1393
SEE SHEET 1394
SEE SHEET 1395
SEE SHEET 1396
SEE SHEET 1397
SEE SHEET 1398
SEE SHEET 1399
SEE SHEET 1400
SEE SHEET 1401
SEE SHEET 1402
SEE SHEET 1403
SEE SHEET 1404
SEE SHEET 1405
SEE SHEET 1406
SEE SHEET 1407
SEE SHEET 1408
SEE SHEET 1409
SEE SHEET 1410
SEE SHEET 1411
SEE SHEET 1412
SEE SHEET 1413
SEE SHEET 1414
SEE SHEET 1415
SEE SHEET 1416
SEE SHEET 1417
SEE SHEET 1418
SEE SHEET 1419
SEE SHEET 1420
SEE SHEET 1421
SEE SHEET 1422
SEE SHEET 1423
SEE SHEET 1424
SEE SHEET 1425
SEE SHEET 1426
SEE SHEET 1427
SEE SHEET 1428
SEE SHEET 1429
SEE SHEET 1430
SEE SHEET 1431
SEE SHEET 1432
SEE SHEET 1433
SEE SHEET 1434
SEE SHEET 1435
SEE SHEET

This Page Intentionally Left Blank


INT-15 FWY
PCL B
PCL A
PCL C
PCL D
MATCHLINE SEE SHEET 1
SEE SHEET 2
B
B
A
A
C
C
D
D
W.Q. BASIN
TOP: 918 (4.6 AC.)
BOTTOM: 905 (3.0 AC.)
(2' FREEBOARD)
(79,979 CYS)
NAP
S45°09'21"E 190.5'
N44°39'50"W 297.0'
N45°47'41"W 122.1'
S46°29'30"E 247.5'
S39°40'36"E 339.0'
S40°17'00"E 327.7'
N25°18'47"E 93.5'
N50°16'00"W 91.3'
L=453.812', R=1370.000
N40°17'15"W 51.6'
N43°22'54"W 45.2'
N17°57'18"E
N51°08'22"W 30.0'
N47°18'21"W 315.8'
N47°18'21"W 315.8'
N42°41'39"E 315.8'
N42°41'39"E 315.8'
N47°18'21"W 315.8'
N42°41'39"E 315.8'
N47°18'21"W 315.8'
N42°41'39"E 315.8'
N47°18'21"W

This Page Intentionally Left Blank

2.5.4 Noise Variance

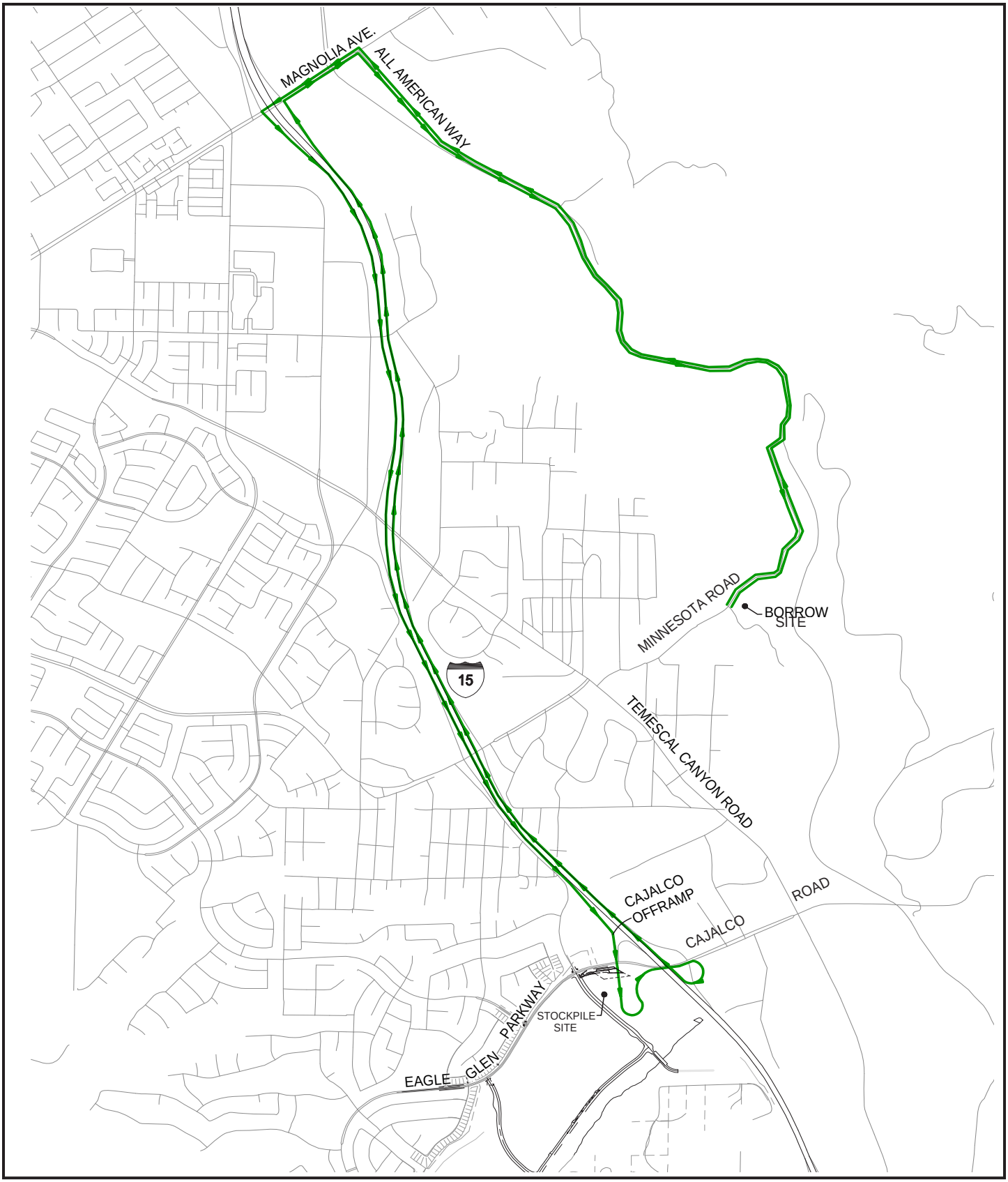
As explained in detail below, the Modified Project Site requires the import of a substantial quantity of soil to raise the elevation close to the elevation of existing PA 11 and to allow gravity flow to the existing sewer lift station in PA 12. The Applicant has presented two alternatives for soil import. One of the alternatives would require importing soil by truck and at night. The other alternative would import soil from adjacent development area by scraper and occur during the day. Due to the long duration (118 nights) of importing soil by truck and the proposal to conduct the soil import operations during nighttime hours, potential nighttime noise violations may occur on a temporary basis during the soil import operations. If violations are anticipated, a Noise Variance to allow temporary non-compliance with the City's noise ordinance will be required. It should be noted that the Noise Variance is subject to further review as part of a separate discretionary review process.

The project Applicant proposes to import soil during nighttime hours (8:00 p.m. to 4:00 a.m.), and complete grading operations during both daytime and nighttime hours. Two sources of soil have been identified for importing soil onto the Modified Project Site. Descriptions of Soil Import Alternatives 1 and 2 are discussed below

Soil Import Alternative 1: One alternative to importing soil to the Modified Project Site would occur by truck from an off-site source. One potential source of import, or borrow site, has been identified from the FST Sand and Gravel Mine, located east of I-15 and approximately ½ mile east of El Cerrito Road. Other import sites are being considered within an approximately 10-mile radius of the project site.

Trucks would haul the soil from a borrow site on Minnesota Road to Sherborn Street, to Magnolia Avenue, to the I-15 Freeway southbound on ramp at Magnolia Avenue, travel southbound on the freeway, and exit the southbound off-ramp at Cajalco Road. Trucks would access the Modified Project Site by proceeding straight through the off-ramp intersection onto the Modified Project Site. Returning trucks would exit in similar manner by returning to Cajalco Road and turning right at the off-ramp intersection. Trucks would return onto Cajalco Road, enter I-15 Freeway northbound to Magnolia Avenue to Sherborn Street and travel south to the borrow site. In essence, a temporary fourth leg to the I-15 Southbound offramp/Cajalco Road intersection would be added. Traffic control or a temporary signal modification would be required for this additional truck movement. This proposed haul route requires approval of a temporary encroachment permit from Caltrans and the City. Figure 2.6 shows the proposed haul route for Soil Import Alternative 1.

This Page Intentionally Left Blank



enplanners

FIGURE 2.6

N

N.T.S.

Source: Hunsaker&Associates (11/07/2019)

Arantine Hills Specific Plan Amendment No. 3
Supplemental EIR No. 2
City of Corona

Soil Import Alternative 1 Haul Route

This Page Intentionally Left Blank

Daytime grading activities would initially last for approximately two weeks and begin before the soil import operation, and grading operations would overlap with initial soil import. The daytime grading activities would include remedial grading, which requires the over-excavation of approximately four to six feet below existing ground surface. To accomplish the over-excavation, the grading contractor would likely use three (3) Caterpillar 651 scrapers, one (1) tracked bulldozer (Caterpillar D-8), one (1) water truck, and one (1) street sweeper. The over-excavated soil would be stockpiled on site. Additional daytime grading would occur after imported soil has been placed in the over-excavated areas to raise the site towards proposed grades. The stockpiled over-excavated soil would then be placed over the imported soil, and compacted to geotechnical specifications to create the finished building pad.

During the nighttime hours, soil would be imported to the Modified Project Site, dumped, and moved by grading equipment. Double-belly dirt haulers would be used, which do not require backing up or banging of tailgates. The trucks would drive a continuous route across the Modified Project Site while dumping their load. One (1) rubber tire bulldozer, such as a Caterpillar 834, would be used to move and compact the imported soil. The site is large enough to avoid backing up and the use of warning signals. Additionally, the rubber tire equipment would be used to avoid the noise from tracked equipment. In addition to the bulldozer, one (1) water truck (4,000 gallon) and one (1) street sweeper would be used during the soil import operation.

The soil import operation would include 250 full truck loads per night. Based on 15 cubic yards per truck load, a total of approximately 3,750 cubic yards would be imported per night. To import 440,000 cubic yards of soil, approximately 118 nights of soil import would be required.

Soil Import Alternative 2: The second alternative to importing soil to the Modified Project Site would occur by importing soil from PA 14 of the existing AHSP. PA 14 is located to the south of the Modified Project Site and further south of Bedford Canyon Wash. PA 14 is approximately 26 acres, undeveloped, and planned for Medium Density Residential development in the current AHSP. This area forms an elevated plateau above Bedford Canyon Wash. Lowering the elevation of PA 14 by approximately 13 feet would generate approximately 425,000 cubic yards of soil for the Modified Project Site. The remaining 15,000 cubic yards would be generated by lowering PA 14 an additional half foot or importing the remaining soil from an off-site location.

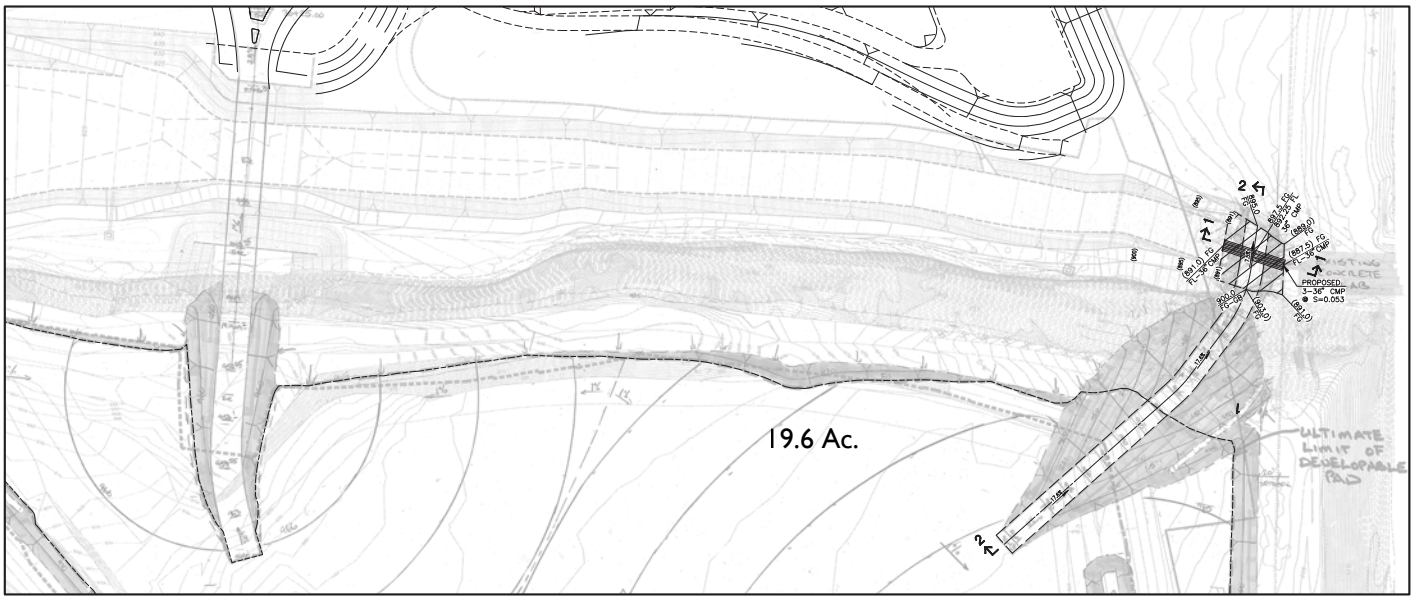
To haul the soil from PA 14, an access ramp would be graded in the northeast portion of PA 14 leading down to the existing concrete crossing of Bedford Canyon Wash. Grading the access ramp would require creating a notch in the existing bluff with side slopes opened at a 2:1 grade. The lower portion of the access ramp would be steeper than 2:1 and reinforced with geo-grids or similar stabilizers. Five to 10 feet of soil would be temporarily placed on top of the existing concrete pad crossing Bedford Canyon Wash to both protect the concrete pad and function as a ramp to gain elevation towards the top of the Wash banks.

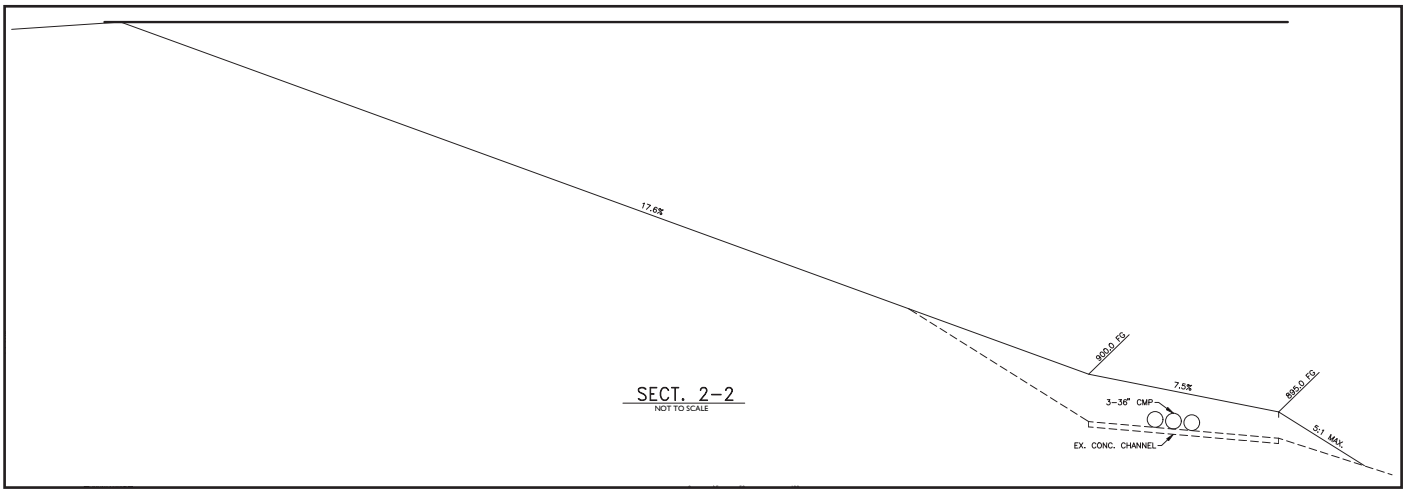
The ramp from PA 14 to the concrete crossing of Bedford Canyon Wash would be constructed by an excavator. Careful grading operations and BMPs would avoid soil spoils into Bedford Canyon Wash. While this import operation would need to take place during the dry season, temporary pipe culverts would be placed on top of the concrete pad under the soil ramp in case unexpected storms cause Bedford Canyon Wash to flow. Following grading of the ramp, scrapers would move the soil from PA 14 to the Modified Project Site. Only one scraper at a time would fit on the soil bridge across Bedford Canyon Wash, so this part of the haul route would be limited to one-way traffic. After crossing Bedford Canyon Wash, scrapers would continue north, paralleling I-15, on the Modified Project Site property to place the fill soil. All soil movement would be done off street.

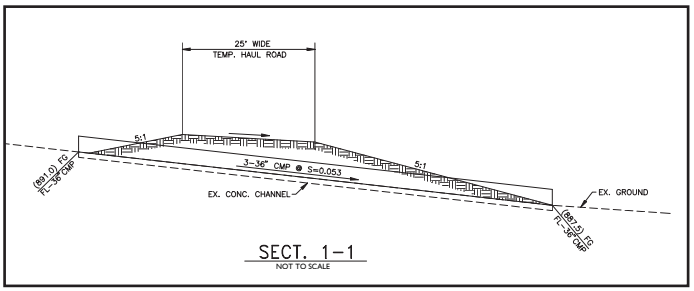
Following completion of the soil import, the temporary soil bridge and culverts would be removed from the concrete pad crossing Bedford Canyon Wash. The notch in the bluff for the access ramp would be reconstructed at 2:1 slopes and surface terrace drains would be added to control storm runoff and minimize erosion. The graded slopes would be replanted with a native coastal sage scrub mix.

For this alternative, the over-excavation work would be the same as described for Soil Import Alternative No. 1. To move the soil from PA 14 to the Modified Project Site, the grading contractor would likely use six (6) Caterpillar 657 scrapers, one (1) D-10 bulldozer, one (1) Caterpillar 834 Rubber Tire Compactor, three (3) water trucks, and one 14H Blade for finishing. Following soil movement, the bluff would be reconstructed using one (1) Caterpillar 345 Excavator, one (1) Caterpillar 623 Scraper, one (1) Caterpillar 834 Rubber Tire Compactor, one (1) Caterpillar 980 Rubber Tire Loader, one (1) D-5 bulldozer, one (1) 84-inch Compactor, and a water truck.

Figure 2.7 shows the proposed haul route for Soil Import Alternative 2.







enplanners

FIGURE 2.7

N.T.S.

Source: Hunsaker&Associates (10/19/2019)

Arantine Hills Specific Plan Amendment No. 3
Supplemental EIR No. 2
City of Corona

Soil Import Alternative 2 Haul Route

This Page Intentionally Left Blank

2.5.5 Precise Plan

A Precise Plan is required to approve the final design of the entire Bedford Marketplace, which includes both the Modified Project Site and a portion of the Approved Project Site (i.e., the existing 10 acres designated GC in current PA 11). Bedford Marketplace is planned as a neighborhood commercial center designed to bring commercial services to the Bedford and Eagle Glen communities Bedford Marketplace and would consist of 223,108 sf of GC uses that includes a 135-room hotel on 21.7 acres. The center would be designed in the farmhouse style of architecture that would be added as part of the Modified Project. Figure 2.8 shows the Modified Project Site Plan.

Bedford Marketplace would have three entrances from the extension of Bedford Canyon Road. A combination 8-foot sidewalk and 6-foot trail would form the western boundary and provide pedestrian connectivity from the intersection of Bedford Canyon Road and Eagle Glen Parkway to the newly installed trail system located on the north side of Bedford Canyon Wash, including the new dog park, and to residential areas within the Bedford residential community.

While the retail and service users have not been finalized and are subject to change, potential uses within Bedford Marketplace would include a fuel facility with convenience store, auto-spa, quick serve coffee with drive thru, financial institution with drive thru, day care center, health and fitness club, super market, pharmacy, hotel, sit-down restaurants, quick serve restaurants, and other retail stores that are consistent with a neighborhood retail center.

Located in the southeastern portion of the Modified Project Site is a planned hotel. The proposed 135-room hotel would be located south of the commercial uses in the southeastern portion of the Modified Project Site, north of the proposed water quality basin, and east of the existing water quality basin PAs 12 and 13. The hotel would have a height of four stories or 50 feet, whichever is greater. Hotel parking would be accommodated by surface parking lots.

Parking consistent with the City's parking code is planned throughout Bedford Marketplace. Shopping center identification monument signage is planned at the corner of Bedford Canyon Road and Eagle Glen Parkway. A tenant identification pylon sign facing I-15 is planned north of the hotel site and a pylon sign specific to the hotel is planned south of the hotel site along I-15. Certain uses, such as the hotel, will also have wall-mounted building signage on the eastern elevation of the building. A detailed master sign program outlines all proposed signage.

The Modified Project will include review and approval of infrastructure improvements as part of the PP. These improvements include domestic water connections, dry utility connections, sewer connections, and stormwater conveyance features and a water quality basin.

This Page Intentionally Left Blank

PROJECT INFORMATION

ZONING C3 - GENERAL COMMERCIAL (ARANTINE HILLS SP)

BUILDING AREA

GROSS LAND	±1,214,453 SF (± 27.88 ACRES)
NET LAND AREA	±923,472 SF (±21.2 ACRES)

RETAIL PARCEL

NET RETAIL SITE ± 794,796 SF (±18.25 ACRES)

TOTAL BUILDING AREA:	± 134,378 SF
RESTAURANTS	± 21,226 SF
RETAIL	±75,152 SF
HEALTH CLUB	±38,000 SF
LAND / BLDG RATIO:	4.9/ 1
COVERAGE:	16.91%

PARKING SUMMARY:

PARKING REQUIRED:		
RESTAURANTS (1/ 100SF.)	±18,400 SF / 100	= 184 STALLS
RETAIL (1/ 250SF)	±60,826 SF / 250	= 243 STALLS
HEALTH CLUB (1/150SF)	±38,000 SF / 150	= 253 STALLS
DAY CARE	±9,990 SF (1 / 10 student)	= 18 STALLS
BANK/FINANCIAL	3,562 SF / 200	= 18 STALLS
CAR WASH	3,600 SF (10 min)	= 10 STALLS
TOTAL REQUIRED:		726 STALLS
PARKING PROVIDED:		888 STALLS
PARKING RATIO:		6.60/1,000 SF

HOTEL PARCEL

NET HOTEL SITE ± 128,676 SF (±2.95 ACRES)

TOTAL BUILDING AREA:	± 88,730 SF
BUILDING FOOTPRINT:	± 24,804 SF

PARKING SUMMARY:

PARKING REQUIRED:	1/ 1 UNIT (135 UNITS)	135 STALLS
	2/ MANAGER OFFICE (3)	6 STALLS
	TOTAL FOR HOTEL	141 STALLS
PARKING PROVIDED:		141 STALLS

CITY PARKING REQUIRED

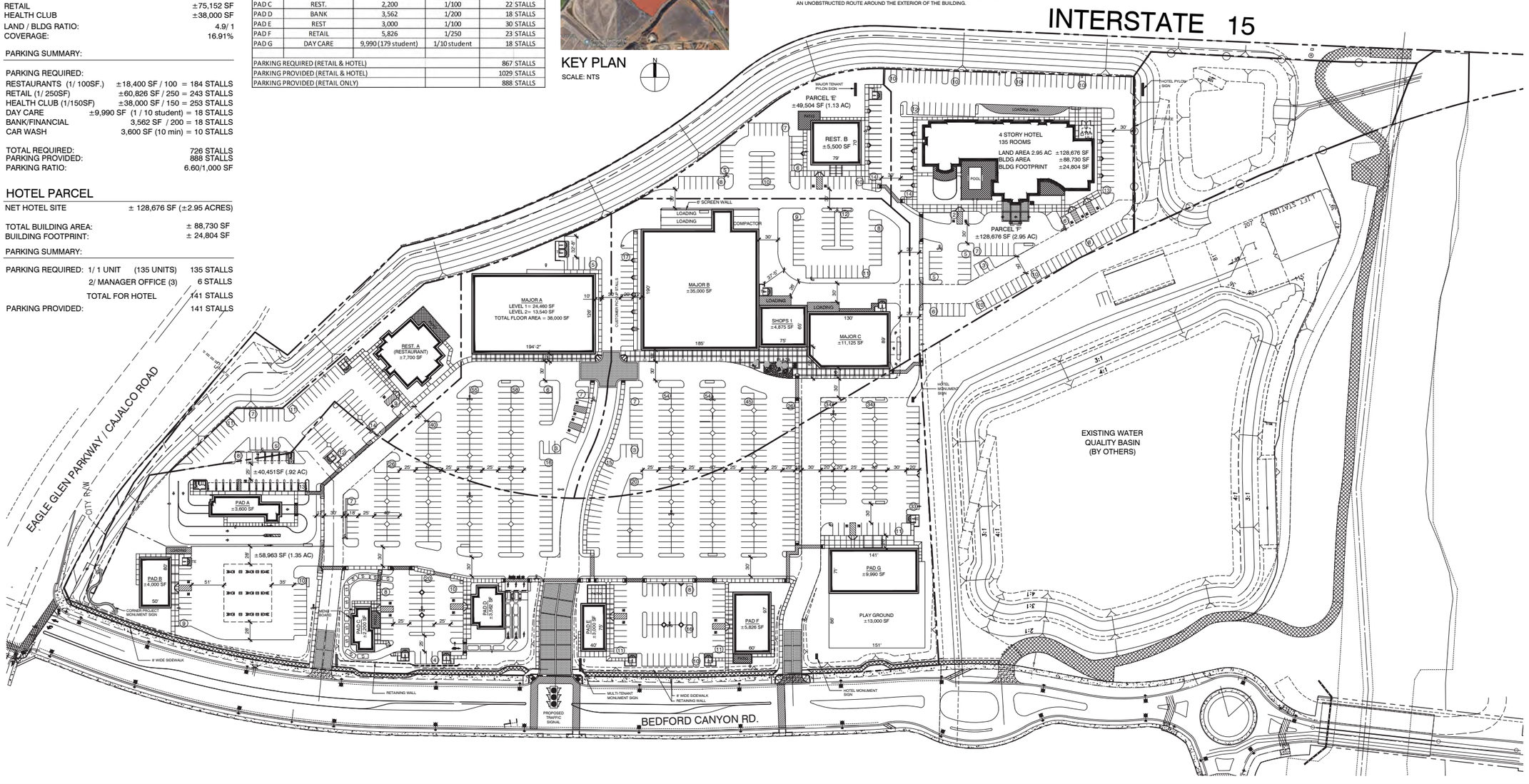
BLDG	USES	FLOOR AREA (SF)	REQ'D RATIO	PARKING REQUIRED
HOTEL	HOTEL	135 ROOMS	1/1UNIT	141 STALLS
MAJOR A	FITNESS	38,000	1/150	253 STALLS
MAJOR B	MARKET	35,000	1/250	140 STALLS
MAJOR C	PHARMACY	11,125	1/250	45 STALLS
SHOPS 1	RETAIL	4,875	1/250	20 STALLS
REST. A	FOOD	7,700	1/100	77 STALLS
REST. B	FOOD	5,500	1/100	55 STALLS
PAD A	CAR WASH	3,600	10 (MIN)	10 STALLS
PAD B	C. STORE	4,000	1/250	16 STALLS
PAD C	REST.	2,200	1/100	22 STALLS
PAD D	BANK	3,562	1/200	18 STALLS
PAD E	REST	3,000	1/100	30 STALLS
PAD F	RETAIL	5,826	1/250	23 STALLS
PAD G	DAY CARE	9,990 (179 student)	1/10 student	18 STALLS
PARKING REQUIRED (RETAIL & HOTEL)				867 STALLS
PARKING PROVIDED (RETAIL & HOTEL)				1029 STALLS
PARKING PROVIDED (RETAIL ONLY)				888 STALLS



KEY PLAN
SCALE: NTS

FIRE DEPARTMENT GENERAL NOTES:

1. PLANS SHALL SHOW A MINIMUM DRIVE WIDTH OF 28 FEET.
2. PROVIDE PLANS FOR TWO (2) ALL WEATHER SURFACE ACCESS WAYS TO BE APPROVED BY THE FIRE PREVENTION MANAGER AND CONSTRUCT THE ACCESS WAY(S) TO ACCOMMODATE 70,000 LBS. GVW DURING ALL PHASES OF CONSTRUCTION.
3. ALL PROJECTS SHALL COMPLY WITH THE CITY OF CORONA FIRE DEPARTMENT SITE CONSTRUCTION STANDARD. A COPY OF WHICH IS AVAILABLE AT THE FIRE DEPARTMENT COUNTER. PROJECTS SHALL HAVE APPROVED ALL WEATHER ACCESS FROM TWO (2) DIRECTIONS AND FIRE HYDRANTS PROVIDING THE REQUIRED FIRE FLOW TESTED AND ACCEPTED PRIOR TO COMBUSTIBLE CONSTRUCTION.
4. PROVIDE A MINIMUM TWENTY-FIVE (25) FOOT INSIDE AND FIFTY (50) FOOT OUTSIDE RADIUS FOR ACCESS DRIVE(S).
5. STREET AND DRIVE GRADES SHALL NOT EXCEED 10% UNLESS APPROVED BY THE FIRE CHIEF AND CITY ENGINEER.
6. ANY OVERHEAD OBSTRUCTION SUCH AS THE SECOND STORY OF A BUILDING, PORTE COCHERE, ETC., THAT INTRUDES INTO THE REQUIRED CLEAR WIDTH OF FIRE VEHICLE ACCESS DRIVES SHALL PROVIDE A MINIMUM CLEAR HEIGHT OF FIFTEEN (15) FEET UNLESS OTHERWISE APPROVED BY THE FIRE CHIEF.
7. MODIFY THE SITE PLAN TO PROVIDE AN ALL-WEATHER ACCESS WITHIN 150 FEET OF PORTIONS OF EXTERIOR WALLS OF THE FIRST STORY OF THE BUILDING AS MEASURED BY AN UNOBSTRUCTED ROUTE AROUND THE EXTERIOR OF THE BUILDING.
8. MEET WITH CORONA FIRE DEPARTMENT TO DETERMINE LOCATIONS OF RED CURBING AND SIGNAGE BY FIRE HYDRANTS, FIRE DEPARTMENT CONNECTIONS, AND DESIGNATED FIRE LANES ON SITE.
9. A KNOX BOX SHALL BE PROVIDED FOR THE FOLLOWING BUILDING(S):
10. A MINIMUM FIRE FLOW OF 3000 GPM SHALL BE PROVIDED.
11. THE FIRE SERVICE WATERLINE SHALL BE LOOPED AND PROVIDED WITH TWO (2) SEPARATE POINTS OF CONNECTION.
12. FIRE HYDRANTS ARE TO BE SPACED A MAXIMUM 250 FEET APART.
13. BUILDING(S) SHALL NOT BE CONSTRUCTED ACROSS PROPERTY LINE(S) WITHOUT APPROVAL OF THE BUILDING OFFICIAL.
14. PROVIDE CLASS A ROOFING MATERIAL.
15. A FIRE FACILITIES FEE OF $231.00 PER ACRE IS REQUIRED PER CORONA MUNICIPAL CODE SECTION 3.36.030 AND MUST BE PAID PRIOR TO BUILDING PERMIT ISSUANCE.
16. PER 511 OF THE CORONA MUNICIPAL CODE, A PUBLIC SAFETY RADIO COMMUNICATION STUDY IS REQUIRED. CONSULT WITH THE FIRE DEPARTMENT FOR SPECIFIC REQUIREMENTS FOR THIS STUDY.
17. GROVES AND WEED ABATEMENT SHALL BE MAINTAINED SO AS NOT TO POSE A FIRE HAZARD UNTIL TIME OF DEVELOPMENT.
18. A SPECIFIC ADDRESS, ASSIGNED BY THE CITY OF CORONA, SHALL BE PROVIDED FOR EACH BUILDING AS SPECIFIED BY THE FIRE DEPARTMENT ADDRESS STANDARD WHICH CAN BE OBTAINED AT THE FIRE DEPARTMENT COUNTER AT CITY HALL. ADDRESS MUST BE ILLUMINATED DURING ALL HOURS OF DARKNESS.
19. FIRE EXTINGUISHERS SHALL BE PROVIDED PRIOR TO OCCUPANCY. FIRE EXTINGUISHERS SHALL BEAR A CALIFORNIA STATE FIRE MARSHALS SERVICE TAG; IT SHALL BE APPROPRIATELY RATED FOR THE HAZARD; IT SHALL BE MOUNTED SO THAT THE TOP OF THE EXTINGUISHER IS NO HIGHER THAN FIVE (5) FEET ABOVE FLOOR LEVEL; AND SHALL BE LOCATED SUCH THAT THE TRAVEL DISTANCE TO AN EXTINGUISHER DOES NOT EXCEED SEVENTY-FIVE (75) FEET.
20. AT NO TIME SHALL FIRE HYDRANTS OR FIRE LANES BE BLOCKED BY BUILDING MATERIALS, STORAGE, EQUIPMENT, AND/OR VEHICLES.
21. MULTIPLE UNIT BUILDINGS SHALL HAVE SUITE NUMBER IDENTIFICATION ASSIGNED BY THE FIRE DEPARTMENT. SUBMIT AN EXHIBIT FOR REVIEW AND APPROVAL TO THE FIRE DEPARTMENT. A COPY OF THE PREMISE IDENTIFICATION STANDARD IS AVAILABLE AT CORONACA.GOV.



enplanners

FIGURE 2.8

N.T.S.

Source: MCG Architecture (10/28/2019)

Arantine Hills Specific Plan Amendment No. 3
Supplemental EIR No. 2
City of Corona

Modified Project Site Plan

This Page Intentionally Left Blank

Domestic water and dry utility lines currently exist within the extension of Bedford Canyon Road adjacent to the existing 10-acre commercial pad within the existing AHSP. An update to the Water Supply Assessment for the AHSP has been prepared and forms the basis for the conclusions in Chapter 3.0 regarding water availability.

Sewer is planned to gravity flow to the existing lift station located within the PA 12 of the AHSP.

Stormflows from the Modified Project Site would be collected in a new detention/water quality basin located south of the proposed commercial center in revised PA 11. The basin would be sized to retard peak flows to below the level of existing peak discharge conditions. In addition to detaining flows, the basin would allow for infiltration and provide water quality treatment. The detention basin is planned to discharge to Bedford Canyon Wash. An outlet pipe and associated headwall would be constructed within the previously disturbed and newly constructed bank of Bedford Canyon Wash on the concrete spillway, which would avoid disturbing the soft bottom of Bedford Canyon Wash and impacting native vegetation.

2.6 COMPARISON OF MODIFIED PROJECT (PROPOSED AHSP) TO APPROVED PROJECT (APPROVED AHSP)

The proposed AHSP, or Modified Project, would entail a larger footprint in comparison to the approved AHSP, or Approved Project. The Modified Project would encompass 325.7 total acres while the Approved Project encompasses 307.8 acres. The Modified Project would permit development of 223,108 sf of GC uses including a 135-room hotel on 21.7 acres while the Approved Project permits development of 80,000 sf of GC uses on 10 acres. The permitted GC land use types would remain unchanged as part of the Modified Project. The Modified Project would provide for 83.6 acres of OS while the Approved Project provides 77.4 acres of OS. Both the Approved and Modified Project allow up to 1,806 residential dus on 191.6 acres, 9.9 acres of parks, and 18.9 acres of master planned roadways. Previously referenced Table 2.A presents a breakdown of the approved and proposed land uses by the specific land uses contained in the AHSP.

2.7 PROJECT OBJECTIVES

The California Environmental Quality Act (CEQA) Guidelines require an EIR Project Description include “a statement of objectives sought by the proposed project.” The following project objectives from the approved AHSP remain valid for the proposed AHSP.

- Build upon the platform of high-quality design, architecture, and landscaping established by the neighboring Eagle Glen residential community to provide a cohesive, pedestrian-friendly community that offers a variety of recreational amenities to residents of Arantine Hills.

- Establish open space preservation area-adjacent to Bedford Canyon Wash to provide an important link to the natural environment.
- Develop Arantine Hills as a well-designed, high quality residential community that integrates residential uses with retail commercial uses.
- Benefit the City and its residents to fund and implement the needed improvements to the I-15/ Cajalco Road freeway Interchange.
- Develop a planning area with retail commercial uses to serve local and nearby residents and generate revenue for the City.
- Provide a General Commercial planning area that will accommodate retail and service uses, that will offer new employment opportunities, and contribute to a strong and diversified economic base.
- Address the City's current and projected housing needs for all segments of the community by providing a range of family-oriented single-family detached and attached housing and multifamily residences.
- Establish a mix of land uses and local-serving activities that meet the General Plan's objectives concerning community character and pedestrian-friendly design.
- Implement the City's General Plan Land Use Element goal to provide for compatibility of land uses, recreation, and resource protection.
- Create a system of roads, trails, and sidewalks that will fulfill the policies of the Corona General Plan by allowing residents to live in proximity to park and recreational opportunities and retail commercial shops and services.
- Provide a network of pleasant, safe, and convenient sidewalks, and a bikeway along "B" Street.
- Concentrate development within neighborhoods to promote greater efficiency of land use, and promote walking and bicycling as an alternative to motor vehicle use.
- Incorporate "green" and sustainable practices, as practicable, in developing buildings and infrastructure in Arantine Hills.
- Maximize opportunities for using water-wise plant materials in the project landscaping to promote water conservation.
- Identify and address safety hazards, such as wildfire and flooding dangers, through implementation of design safety features and improvements to Bedford Canyon Wash.
- Undertake development of the project site in a manner that is economically feasible and balanced to address both the applicant's and the City's economic concerns.

- Pass storm flows through either Bedford Canyon Wash or an adjacent bypass channel in a manner that minimizes erosion in Bedford Canyon Wash, safely conveys storm flows in a manner that protects adjacent housing and property, and creates a more conducive setting to reestablishment of natural vegetation within Bedford Canyon Wash.

2.8 Discretionary Actions, Permits, and Other Approvals

In accordance with Sections 15050 and 15367 of the State CEQA Guidelines, the City as Lead Agency has principal authority and jurisdiction for CEQA actions. Responsible Agencies are those agencies that have jurisdiction or authority over one or more aspects associated with the development of a proposed project and/or mitigation. Trustee Agencies are State agencies that have jurisdiction by law over natural resources affected by the proposed project.

The legislative and discretionary actions to be considered by the City as part of the proposed project include:

- **Approval of a General Plan Amendment (GPA 2019-0002):** The Modified Project requires City approval of a GPA to amend the existing General Plan Land Use designations consistent with AHSPA No. 3. As discussed in Section 2.5.1, the General Plan land use designation on 11.7 acres would change from Agricultural to GC. The General Plan land use designation on 6.21 acres would change from Agricultural to OS.
- **Approval of a Specific Plan Amendment (SPA 2019-0005):** The Modified Project requires City approval of an SPA to amend the existing AHSP Land Use Plan and the City's Zoning Map consistent with AHSPA No. 3. As discussed in Section 2.5.2, GC land uses within the AHSP would increase by 11.7 acres from 10.0 to 21.7 acres, and the amount of GC square footage would correspondingly increase by 143,108 sf from 80,000 to 223,108 sf which includes a 135-room hotel. The additional GC land use quantities would be added to PA 11 and the permitted GC land use types would remain unchanged. OS land uses within the AHSP would increase by 6.21 acres from 77.4 to 83.6 acres. The increase in OS would occur in newly created PA 12A proposed as part of AHSPA No. 3. The maximum permitted number of residences (1,806 dus) on 191.6 acres, 9.9 acres of parks, and 18.9 acres of master planned roadways would remain unchanged. As part of these amendments to the AHSP, the City's Zoning Map would result in the conversion of 11.7 acres from Agricultural to GC zoning and the conversion of 6.21 acres from Agricultural to OS zoning.
- **Approval of a Parcel Map (PM 37788):** The Modified Project requires City approval of a PM to change the City Zoning Map consistent with AHSPA No. 3. As discussed in Section 2.5.3, the Modified Project Site is comprised of Assessor's Parcel Numbers 279-240-033 and 279-240-019. The PM would subdivide the two parcels into five numbered parcels and four lettered lots. New

parcels 1 through 5 would be designated for commercial uses while lots A, B, C and D would be designated for open space.

- **Approval of a Noise Variance (VMIN 2019-0006):** As discussed in Section 2.5.4, a Variance from the City's noise ordinance may be required to allow nighttime noise violations to occur on a temporary basis during soil import operations. This application is subject to further discretionary view separate from the GPA, SPA, PM, and PP.
- **Approval of a Precise Plan (PP 2019-0005):** The Modified Project requires City approval of a PP to approve the final design of the entire Bedford Marketplace including both the Modified Project Site and a portion of the Approved Project Site (i.e., the existing 10 acres of GC designated land in current PA 11). As discussed in Section 2.5.5, the PP would result in a neighborhood commercial center designed to bring commercial services to the Bedford and Eagle Glen communities Bedford Marketplace and would consist of 223,108 sf of GC uses that includes a 135-room hotel on 21.7 acres.

  As discussed in Section 2.5.5, the PP will include review and approval of infrastructure improvements associated with domestic water connections, dry utility connections, sewer connections, and stormwater conveyance features and a water quality basin.

3.0 COMPARATIVE EVALUATION OF ENVIRONMENTAL IMPACTS

3.1 INTRODUCTION

This section compares the impact analysis for the Approved Project as contained in the prior or previous Environmental Impact Report (EIR) prepared for the Arantine Hills Specific Plan (AHSP). The AHSP was originally approved by certified EIR in 2012, the first amendment to the AHSP was approved by Supplemental EIR (SEIR) No. 1 in 2016, and a second amendment to the AHSP was approved by EIR Addendum in 2018. In this SEIR, SEIR No. 2, references to the Prior EIR constitute the three prior environmental approvals for the Approved Project. All prior environmental approvals as well as SEIR No. 2 are designated by State Clearinghouse Number 2006091093.

As defined in Chapter 2.0 of this SEIR, the following naming conventions are used interchangeably:

- Approved Project = current AHSP = existing AHSP. As originally approved in 2012, modified by SPA No. 1 in 2016, and modified by SPA No. 2 in 2018. The Approved Project encompasses 307.8 acres and allows up to 1,806 residential dwelling units (dus) on 191.6 acres, 80,000 square (sf) of General Commercial (GC) building area on 10.03 acres, 9.9 acres of parks, 77.4 acres of Open Space (OS), and 18.9 acres of master planned roadways within a 307.8-acre Planning Area (PA) boundary.
- Modified Project = proposed Modified Project = proposed project = proposed AHSP Amendment No. 3 = AHSPA No. 3. The overall AHSP boundary would increase from 307.8 to 325.7 acres, with GC acreage increasing from 10.0 to 21.7 (11.64) acres and OS acreage increasing from 77.4 to 83.6 (6.21 acres). Planned residential, park, and roadway development quantities/acreages would not be affected. The expansion of the AHSP boundary would result in an increase of approximately 143,730 sf in commercial building area that includes a 135-room hotel over and above the Approved Project.
- Modified Project Site = the 17.85-acre expansion area. The Modified Project Site pertains only to the 11.64 acres of GC and 6.21 acres of OS land uses to be added to the AHSP. The property to be designated GC would be added to existing PA 11 and the property to be designated OS would form new PA 12A.

As emphasized in Chapter 2.0, the distinction between Modified Project and the Modified Project Site as used in SEIR No. 2 is worth reiterating. The Modified Project or proposed project refers to the entire

AHSP as revised by proposed AHSPA No. 3. The Modified Project Site references the 17.85-acre property to be added to the AHSP boundary.

A detailed description of the changes to the AHSP proposed as part of the Modified Project is contained in Chapter 2.0 of this SEIR. In general, the overall AHSP boundary would expand from 307.8 to 325.7 acres, consisting of an increase GC land use from 10.0 to 21.7 acres and increase OS land use from 77.4 to 83.6 acres. The quantity of GC building area would increase from 80,000 sf to 223,730 sf.

The comparative analysis contained in SEIR No. 2 and Chapter 2.0 reviews changes included in the proposed Modified Project, changes to existing conditions, and changes to circumstances under which the Modified Project would be undertaken that have occurred since approval of the Prior EIR documents. This chapter reviews any new information of substantial importance that was not known and could not have been known with exercise of reasonable diligence at the time that the EIR was certified. This section further provides supporting evidence as to why, as a result of such changes or new information, an SEIR is required. This examination includes an analysis consistent with State Public Resources Code Section 21166 and California Environmental Quality Act (CEQA) Guidelines Sections 15162 and 15163 of and their applicability to the proposed Modified Project.

The environmental checklist form contained in CEQA Guidelines Appendix G has been modified as shown in Section 3.3. In this way, the comparative analysis contained in Section 3.4 for the environmental topics contained in the Prior EIR can demonstrate compliance with CEQA Guidelines Sections 15162 and 15163 regarding preparation of Subsequent and Supplemental EIRs. For each environmental topic, findings are made regarding 1) environmental effects of the proposed Modified Project in comparison to the findings of the Approved Project in the Prior EIR; and 2) whether the Prior EIR adequately analyzes the potential impacts of the Modified Project. Each environmental topic discussed in this analysis includes an overview of the impacts to the environment evaluated in the Prior EIR, a comparison between the Modified Project's effects on the environment and the effects identified in the Prior EIR, and whether the Modified Project's physical effects on the environment are within the scope of those analyzed in the Prior EIR. The mitigation measures from the Prior EIR that are being carried forward and incorporated into the Modified Project are also identified in this analysis (pursuant to CEQA Guidelines Section 151688 [c]) and assessed for applicability and the need for modifications to reflect the Modified Project.

For the reasons identified in the checklist below, this SEIR evaluation determined that the Modified Project results in no substantial changes with the potential for new significant impacts and no additional analysis is required.

3.2 MODIFIED ENVIRONMENTAL CHECKLIST

The City created modified checklist headings to address the questions posed by CEQA Guidelines Sections 15162 and 15163 regarding Subsequent and Supplemental documents. The headings are included in Section 3.3 and include the following:

- Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR;
- Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR;
- Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR;
- Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required.

3.3 ENVIRONMENTAL TOPICS CHANGED BY MODIFIED PROJECT

The environmental topics checked below would involve at least one impact that is a "substantial change in a project" or "involves circumstances" resulting in new or more severe impacts requiring revisions to the Prior EIR as indicated by the analysis contained in Section 3.4. In these cases, the new or more severe impact would be fully mitigated by implementation of new mitigation measures or modifications to the mitigation measures from the Prior EIR. For other topics, there have been no changes to the severity of the impact but minor changes to mitigation measures are required to reflect changes proposed by the Modified Project or to update the measures to reflect current best practices.

☐ Aesthetics	☐ Agriculture and Forestry Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Geology and Soils
☐ Greenhouse Gas Emissions	☐ Hazards and Hazardous Materials	☐ Hydrology and Water Quality
☐ Land Use and Planning	☐ Mineral Resources	☒ Noise
☐ Population and Housing	☐ Public Services	☐ Recreation
☐ Transportation/Traffic	☐ Utilities and Service Systems	☐ Mandatory Findings of Significance

This Page Intentionally Left Blank

3.4 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

3.4.1 Aesthetics

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☒
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

Summary of Impacts Identified in Prior EIR

a) Have a substantial adverse effect on a scenic vista

The Prior EIR determined development of the Approved Project would not physically obstruct City-designated scenic vistas and would be consistent with development envisioned in the City's General Plan. The prior EIR determined development of the Approved Project would not have significant impacts on visual resources because the Approved Project site does not constitute a scenic resource or provide views of a scenic vista. As determined in the Prior EIR, development of the current AHSP would be far below the elevation of adjacent viewers and would not obstruct views beyond Bedford Canyon Wash and views from the elevated Eagle Glen area would not be substantially affected. Therefore, impacts to scenic vistas were found to be less than significant.

b) Damage scenic resources and vistas within or from scenic highways and arterials

The Prior EIR determined although there are significant scenic resources and scenic vista visible from the AHSP area and surrounding roadways, none are visible from a designated scenic highway or arterial as there are no state or City-designated scenic highways or arterials in the vicinity of the Approved Project. Therefore, impacts related to scenic highways would not occur.

c) Degrade visual character or quality of site and surrounding resources

The Prior EIR determined that although implementation of the Approved Project would result in development that would alter the existing visual character of the property within the AHSP boundary, the site was not considered to be an aesthetic resource in its (then) current undeveloped state. Adherence to established and proposed City requirements for architectural elements, design features, landscape requirements (as specified in current AHSP) would ensure a high-quality, consistent, and compatible development that would not substantially degrade the visual character or quality of the site. The Prior EIR concluded implementation of the AHSP would not conflict with applicable City General Plan policies related to aesthetics. Therefore, impacts were considered less than significant.

d) New source of light and glare affecting day or nighttime views

The Prior EIR determined the Approved Project site was located at a lower elevation than the existing adjacent land uses, and therefore lighting from the Approved Project would not spill over onto adjacent or near-by properties. The Prior EIR noted all lighting fixtures installed for the Approved Project would comply with City lighting standards requiring minimal to no spillover onto adjacent residences, sensitive land uses, and open space, resulting in a less than significant impact. Similarly, the Prior EIR determined traffic signal lights installed as part of the Approved Project would be shielded to prevent light spill, and since there are sources of higher power lighting in the area of the proposed traffic signal lights, lighting impacts from the placement of traffic signals were considered less than significant. The Prior EIR determined adherence to the AHSP and City's Zoning Code

lighting standards would ensure building or parking lighting would not impact adjacent land uses. Therefore, impacts associated with light and glare were found to be less than significant.

Impacts Associated with the Modified Project

(a) Have a substantial adverse effect on a scenic vista?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project Site and current Planning Area (PA) 11 are located in the lowest elevations within the AHSP along with PAs 12, 13 and 14. Due to the higher elevation of the surrounding properties to the northwest and southwest, adjacency of I-15 to the northeast, and higher elevations to the south and southwest within the Approved Project and elevated bluffs further south and southwest above Bedford Canyon Wash, development of the Modified Project would not obstruct views from these locations. Views from the elevated Eagle Glen area would not be substantially affected. Therefore, no new or substantially greater impacts related to scenic vistas would occur with implementation of the Modified Project compared to those identified in Prior EIR. The Modified Project's impacts are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

(b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project Site is currently vacant property with rolling topography and ruderal vegetation. No trees, rock outcroppings, historic buildings, or any other scenic resource is located on the Modified Project Site. Furthermore, the Modified Project would expand PA 11 toward the I-15 freeway and the I-15/Cajalco Road Southbound On and Off-Ramp intersection. The Modified Project would not result in changes such that the Modified Project Site would be visible from a designated scenic highway. Although there are significant visual resources visible from within the AHSP boundary and surrounding roadways, none of these resources are visible from a designated scenic highway or arterial and the AHSP is not located within a State scenic highway. No new State scenic highways or local scenic arterials have been designated in the area surrounding the AHSP since its initial adoption in 2012. Therefore, no new impacts related to scenic resources within a State scenic highway or local scenic highway would occur. The Modified Project's impacts are consistent with the impacts identified in the Prior EIR and the level of impact (no impact) remains unchanged. This impact will not be evaluated further in this SEIR.

(c) Substantially degrade the existing visual character or quality of the site and its surroundings?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project proposes an expansion of the AHSP with land use designations consistent with the current AHSP. As indicated in the Prior EIR, implementation of the AHSP would result in development that would alter the existing visual character of the site. The Modified Project would adhere to the development regulations contained in the AHSP and zoning code pertaining to architectural, design, and landscape features to ensure high-quality, consistent, and compatible development. With implementation of these design related regulations, the Prior EIR determined the visual character or quality of the site and surroundings would not be substantially degraded. The Modified Project's impacts are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

(d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project would add commercial and open space property in the northeast portion of the Approved Project, adjacent to I-15 and the I-15 Southbound On- and Off-Ramp intersection with Cajalco Road. An 11.64-acre property would be added to PA 11 and increase commercial development, introducing additional sources of light and glare from the increase in commercial development as compared to the Approved Project. As stated in the Prior EIR and above, the Modified Project Site and current PA 11 are located in the lowest elevations within the AHSP along with PAs 12, 13 and 14. Due to the higher elevation of the surrounding properties to the northwest and southwest, adjacency of I-15 to the northeast, higher elevations to the south and southwest within the Approved Project, and elevated bluffs further south and southwest above Bedford Canyon Wash, day time glare and nighttime lighting associated with commercial development on the Modified Project Site would not be highly visible to surrounding development. As discussed in the Prior EIR, all lighting fixtures associated with implementation of the Approved Project would adhere to the City's lighting standards and would be required to direct light downward with minimal spillover onto adjacent residences, sensitive land uses, and open space. Adherence to the AHSP and the City's Zoning Code lighting standards that require adequate light shielding, appropriate light intensity, and proper light location would ensure building or parking lighting would not significantly impact adjacent uses. Therefore, no new or substantially greater impacts would occur with implementation of the Modified Project when compared to those identified in the Prior EIR. The Modified Project's impacts are consistent with the impacts identified in the Prior EIR and the level of

impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

Cumulative Impacts Associated with the Proposed Project

Less Than Significant Impact/No Changes or No New Information Requiring Preparation of an EIR. The Modified Project would add commercial and open space property in the northeast portion of the Approved Project, adjacent to I-15 and the I-15 Southbound On- and Off Ramp intersection with Cajalco Road. The preceding Aesthetics analysis is an assessment of the 17.85 acre Modified Project Site's cumulative impacts with respect to the Approved Project, or the balance of the 307.8-acre current AHSP boundary. As concluded, the Modified Project would not change the significance of Aesthetic impacts as compared to the Prior EIR.

Consistent with the conclusions in the Prior EIR, there are no cumulative projects in the vicinity whose impacts would intermingle with the Modified Project and create a cumulatively significant impact related to scenic views, vistas or resources. The Modified Project Site and the balance of PA 11 would be developed in accordance with the AHSP as amended, resulting in a coordinated, integrated neighborhood commercial center. Consistent with the conclusions in the Prior EIR, there are no cumulative projects in the vicinity whose impacts would intermingle with the Modified Project and create a cumulatively significant degradation of the existing visual character of the site and surroundings. Consistent with the conclusions in the Prior EIR, there are no cumulative projects in the vicinity whose impacts would intermingle with the Modified Project that would create cumulatively significant light and glare impacts.

In summary, the Modified Project would not create a cumulatively significant Aesthetic impact consistent with the Prior EIR. Compliance with the City's Municipal Code, General Plan standards, and proposed AHSP development regulations would ensure the Modified Project in combination with other projects in the area would not result in significant impacts associated with: scenic views, vistas, or resources; degradation of site or surroundings; or introduce substantial new source of light and glare.

Mitigation Measures Identified in Prior EIR and Applicable to Modified Project

No mitigation measures related to Aesthetics were outlined in the Prior EIR. As discussed above, no new impact has been identified. Lacking any new impacts, no new mitigation measures or new alternatives are required for the Modified Project.

This Page Intentionally Left Blank

3.4.2 Agriculture and Forestry Resources

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Summary of Impacts Identified in Prior EIR

a) Conversion of prime, unique, or statewide important farmland

The Prior EIR concluded development of the Approved Project would cause a significant unavoidable impact as a result of impacts to areas designated prime farmland and unique farmland within the AHSP boundary. The Prior EIR concluded this impact was cumulatively considerable, and therefore cumulatively significant and unavoidable.

b) Conflict with an existing agricultural zone or a Williamson Act contract

As concluded in the Prior EIR, the AHSP boundary was zoned "Agricultural." Adoption of the AHSP and the first two amendments established new zoning for the AHSP area. The AHSP established zoning for residential, commercial, park, and open space land uses. The Prior EIR found the change from Agricultural zoning and land use designations to the designations contained in the AHSP to be less than significant because the General Plan also states the purpose of the designation is to "…allow for the continued production of agricultural lands as interim uses preceding urban development and/or as a long-term use." The zone change facilitated development that was consistent with the City's General Plan. Because the proposed zone change and subsequent development of on-site uses was

considered consistent with the General Plan, a less than significant impact associated with the change of zone from Agricultural to the Approved Project zoning designations was identified.

The Prior EIR described the current status of the request filed in 2003 by the project applicant to cancel the Williamson Act contracts within the AHSP. The Prior EIR noted the California Department of Conservation (DOC) concurred with the cancellation request in 2012. Because the process to cancel the existing Williamson Act contract for the applicable lands within the AHSP had commenced and was confirmed by DOC, the Prior EIR found the Approved Project would not result in a significant impact related to Williamson Act contracts.

c) Conflict with existing zoning for, or cause rezoning of, forest land

The Prior EIR concluded the Approved Project did not have any designated forest land and was not zoned for timberland uses. Rezoning of the Approved Project therefore was determined not to conflict with existing forest zoning, did not cause rezoning of forest land, and did not result in the loss or conversion of forest lands to non-forest uses. Therefore, no impacts associated with forest zoning were identified in the Prior EIR.

d) Result in loss of forest land or conversion of forest land

The Prior EIR concluded the Approved Project did not have any designated forest land. The proposed land uses that would result from implementation of the Approved Project would therefore not reduce forest land or convert forest land to non-forest uses. Therefore, no impact associated with loss of forest land or conversion of forest land was identified in the Prior EIR.

e) Other changes that could convert farmland or forest land

As noted above under item a), the Prior EIR noted portions of the Approved Project were designated farmland of local importance, prime farmland, and unique farmland by the California Department of Conservation's Farmland Mapping & Monitoring Program (FMMP). The Prior EIR concluded the conversion of prime farmland was a cumulatively considerable impact, as well as a cumulatively significant and unavoidable impact associated with the Approved Project.

As noted above under item b), the Prior EIR found the change from Agricultural zoning to the zoning proposed by the Approved Project to be less than significant because the General Plan states the purpose of the designation is to "…allow for the continued production of agricultural lands as interim uses preceding urban development and/or as a long-term use." The zone change facilitated development that was consistent with the City's General Plan. Because the proposed zone change and subsequent development of on-site uses was considered consistent with the General Plan, a less than significant impact associated with the change of zone from Agricultural to the Approved Project zoning designations was identified in the Prior EIR.

As noted above under item d), the Prior EIR concluded the Approved Project did not have any designated forest land. Implementation of the Approved Project would not reduce forest land or convert forest land to non-forest uses. No impact associated with loss of forest land or conversion of forest land was identified in the Prior EIR.

Therefore, the Prior EIR determined the Approved Project would result in significant project and cumulative impacts from the loss of prime farmland, a less than significant impact from the conversion of Agricultural zoning to the zoning proposed by the Approved Project, and no impact from the conversion of forest land to non-forest uses.

Impacts Associated with the Modified Project

(a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) to nonagricultural use?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project Site is designated farmland of local importance by the DOC's FMMP. The Modified Project site is not designated as prime farmland, unique farmland, or farmland of statewide importance by the FMMP. Therefore, development of the Modified Project Site in accordance with the proposed Modified Project would not cause new impacts to occur. The Modified Project's impacts to farmland of local importance are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

(b) Conflict with existing zoning for agricultural use or a Williamson Act contract?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project Site is zoned Agriculture on the City's Zoning Map designated Agriculture by the City's General Plan. The Prior EIR found the change from Agricultural zoning and land use designations to the designations contained in the AHSP to be less than significant because the General Plan also states the purpose of the designation is to "…allow for the continued production of agricultural lands as interim uses preceding urban development and/or as a long-term use." The Modified Project is consistent with the General Plan objective to consider urban uses that complement development located on adjoining properties. The adjoining property to the Modified Project site is the balance of the Approved Project that has been previously graded in preparation for implementation of the current AHSP. The Modified Project proposes an expansion of the commercial and open space land uses approved in the current AHSP, consistent with the General Plan objective to consider urban uses that complement development located on adjoining properties.

According to the Riverside County Williamson Act FY 2015/2016 map (Sheet 1 of 3) prepared by the DOC as part of the FMMP, the Modified Project site is mapped as Non-Williamson Act Land, Non-Enrolled Land. Therefore, the Modified Project would not conflict with a Williamson Act contract.

The Modified Project's impacts are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant or no impact) remains unchanged. This topic will not be evaluated further in this SEIR.

(c) Conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. According to the General Plan and Zoning Map, no timber farmland designation exists on the Modified Project Site. The Modified Project would not change those designations; therefore, no new impacts would occur. The Modified Project's impacts are consistent with the impacts identified in the Prior EIR and the level of impact (no impact) remains unchanged. This topic will not be evaluated further in this SEIR.

(d) Result in the loss of forest land or conversion of forest land to non-forest use?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. No forest or timber resources are located on the Modified Project Site. Therefore, no new impacts would occur. The Modified Project's impacts are consistent with the impacts identified in the Prior EIR and the level of impact (no impact) remains unchanged. This topic will not be evaluated further in this SEIR.

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project Site is designated farmland of local importance by the FMMP, with no prime or unique farmland designations. The Modified Project Site is currently zoned Agriculture, and the Modified Project would result in the conversion of the 17.85 acre property from Agricultural zoning to commercial and open space zoning. The change to commercial and open space zoning proposed by the Modified Project would result in a less than significant impact because the General Plan states the purpose of the from Agricultural zone is to "…allow for the continued production of agricultural lands as interim uses preceding urban development and/or as a long-term use." The Modified Project zone change would facilitate development consistent with both the current AHSP currently being developed and the proposed AHSP. The Modified Project proposed uses would be

consistent with the General Plan, and therefore a less than significant impact associated with the change of zone from Agricultural to commercial and open space zoning would occur.

In summary, the Modified Project would result in a less than significant impact from the conversion of farmland of local significance to non-agricultural use and the change in zoning from Agricultural to non-agricultural, and no impact from the conversion of forest land to non-forest uses. The Modified Project's impacts are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant and no impact) remains unchanged. This topic will not be evaluated further in this SEIR.

Cumulative Impacts Associated with the Proposed Project

Less Than Significant Impact/No Changes or No New Information Requiring Preparation of an EIR. As stated previously, the Modified Project would not result in increased impacts to agricultural or forest land as compared to the Prior EIR. Although the Modified Project would result in the development of land currently designated farmland of local importance and change zoning from Agricultural to commercial and open space, impacts were determined to be less than significant. No impacts were determined regarding forest lands. The City maintains an interim General Plan designation for agricultural uses until such time agricultural land is converted to uses consistent with the General Plan. The cumulative effect of development in the region will continue to result in the conversion of agricultural lands to non-agricultural uses. Because agricultural land, including prime farmland, Williamson Act land, and land zoned for agricultural operations, is a finite resource, the conversion of the 17.85 acre Modified Project Site to urban uses, combined with planned and future development in the City and region, represents a significant cumulative impact to agricultural operations and resources that cannot be mitigated. This determination is consistent with the conclusions from the Prior EIR. The Modified Project's cumulative impact would remain the same as the level cited in the Prior EIR. This topic will not be analyzed further in this SEIR.

Mitigation Measures Identified in Prior EIR and Applicable to Modified Project

No mitigation measures related to agriculture and forest lands were outlined in the Prior EIR. As discussed above, no new impact has been identified. Lacking any new impacts, no new mitigation measures or new alternatives are required for the Modified Project.

3.4.3 Air Quality

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☐	☒
c) Result in cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☒
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

Summary of Impacts Identified in Prior EIR

a) Conflict or obstruct applicable air quality plan

The Prior EIR concluded growth forecasts contained in the Southern California Association of Governments (SCAG) Regional Transportation Plan were used in the South Coast Air Quality Management District (SCAQMD) regional Air Quality Management Plan (AQMP) growth forecasts. These forecasts were based on future land use assumptions for the Approved Project as provided by the City. The Approved Project was found to be consistent with the AQMP since the residential and commercial development quantities would remain the same. Therefore, the Prior EIR determined the Approved Project is consistent with the AQMP and no new or increased impact would occur.

b) Violate air quality standard or contribute to existing or projected air quality violation
c) Cumulatively considerable net increase of criteria pollutant in non-attainment status

The Prior EIR determined construction emissions during the peak construction day of the Approved Project would exceed SCAQMD thresholds for nitrogen oxides ($NO_{x)}$ and particulate matter (PM_{10} and $PM_{2.5}$), which was a significant impact that required mitigation. The Prior EIR identified mitigation measures to reduce construction PM_{10} and $PM_{2.5}$ emissions to less than significant. With implementation of mitigation, the Prior EIR concluded NO_x construction emissions would remain significant and unavoidable.

The Prior EIR determined the Approved Project would exceed SCAQMD daily operational thresholds for carbon monoxide (CO), volatile organic compounds (VOC), NO_x, and PM_{10}, which resulted in a significant impact that required mitigation. However, the Prior EIR conducted a long-term microscale (CO hot spot) emissions analysis that determined CO emissions would not result in a significant impact and no mitigation was necessary for CO impacts. With implementation of mitigation, the Prior EIR concluded VOC, NO_x PM_{10} emissions would remain significant and unavoidable.

d) Expose sensitive receptors to pollutants

The Prior EIR conducted Localized Significance Threshold (LST) and CO hotspot screening analyses and determined CO hotspot impacts would be less than significant, and no mitigation was required. The LST analyses identified a significant construction LST impact from PM_{10} emissions, and mitigation was required. The Prior EIR identified mitigation measures to reduce construction LST impacts from PM_{10} to less than significant.

e) Create objectionable odors

The Prior EIR noted SCAQMD Rule 402 prohibits air discharges that can cause injury, nuisance, or annoyance to the health, safety, or comfort of the public. With the exception of short-term construction-related odors (e.g., equipment exhaust and asphalt odors), the Prior EIR found Approved

Project would not include uses that would generate offensive odors such as agricultural uses, wastewater treatment plants, or landfills. The Prior EIR noted application of architectural coatings and installation of asphalt would generate odors, but such odors would be temporary and would not be noticeable beyond the Approved Project construction boundaries. SCAQMD Rules 1108 and 113 identify standards regarding the application of asphalt and architectural coatings, respectively. The Prior EIR determined adherence to applicable provisions of those Rules was a standard requirement for all development projects within the City, and implementation of those Rules as part of the Approved Project's construction would result in a less than significant impact and no mitigation was required.

Impacts Associated with the Modified Project

(a) Conflict with or obstruct implementation of the applicable air quality plan?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. Projects are considered consistent with the AQMP if the growth in socioeconomic factors (e.g., population, employment) is consistent with the underlying regional plans used to develop the AQMP. The future emissions forecasts are primarily based on demographic and economic growth projections provided by SCAG. Thus, demographic growth forecasts for various socioeconomic categories developed by SCAG in their current 2016 RTP/SCS were in turn used to estimate future emissions by SCAQMD in their current 2016 AQMP (SCAQMD 2016).

Pursuant to SCAQMD's consistency analysis guidelines contained in their CEQA Air Quality Handbook, the AQMP is affirmed when a project: (1) does not increase the frequency or severity of an air quality standards violation or cause a new violation; and (2) is consistent with the growth assumptions in the AQMP.

AQMP Consistency Criterion 1: The Modified Project would generate short-term and long-term pollutant emissions over and above those estimated for the Approved Project. However, as detailed in the *Bedford Marketplace Air Quality and Greenhouse Gas Memorandum* (November 26, 2019) prepared by Urban Crossroads and included in Appendix B, and discussed below in items b) and c), construction emissions attributable to development of the Modified Project site plus the balance of PA 11 would be fully mitigated with the introduction of a new mitigation measure related to NO_x construction emissions. Increased operational emissions from the Modified Project (i.e., from the net increase in commercial development on the Modified Project Site) would not create any new impacts or require new mitigation. However, the additional commercial development would incrementally increase VOC, NO_x and PM_{10} emissions determined in the Prior EIR to be a significant and unavoidable impact. The Modified Project would not exceed the significance threshold of the other regulated pollutants (CO, SO_x, PM_{10}, and $PM_{2.5}$).

AQMP Consistency Criterion 2: The CEQA Air Quality Handbook indicates that consistency with AQMP growth assumptions must be analyzed for new or amended General Plans or elements, Specific Plans, and significant projects. The Modified Project includes General Plan and Specific Plan Amendments but is not defined as a significant project. The Modified Project would convert 11.64 acres of Agricultural zoned land to commercial resulting in an increase of 143,730 square feet of commercial building area that includes a 135-room hotel over and above the Approved Project. However, the Modified Project would result in the creation of a neighborhood retail center serving the nearby Eagle Glen and developing Bedford communities. The Modified Project would introduce retail and service uses in an area underserved by such uses, which would result in a reduction in vehicle trips and trip lengths. For these reasons, the Modified Project is considered to be consistent with the AQMP and no mitigation is required. The Modified Project's impacts associated with the AQMP are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

(b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

(c) Result in cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project requires import of 440,000 cubic yards of soil to raise the Modified Project Site to within five feet of current PA 11 and to allow sewer gravity flow to the AHSP sewer lift station in PA 12. Two options have been identified to import soil to the Modified Project site. One option is to haul soil in from an off-site source in trucks during the nighttime hours. The trucking operations are expected to require up to 118 nights. Incoming soil would be trucked onto the Modified Project Site, dumped, and moved and spread around the site. There would also be some overlap of the soil import and daytime grading operations.

A second option is to haul soil in scrapers from AHSP PA 14, which is located south of the Modified Project Site across Bedford Wash. The area of PA 14 would be lowered approximately 13 feet to generate the fill, which would be hauled in scrapers down a constructed ramp and across Bedford Canyon Wash to the project site. This import option would occur during daytime hours and require approximately 100 days to complete.

In addition to importing soil, the Modified Project would result in the development of a larger commercial center as compared to the Approved Project, resulting in additional construction emissions than analyzed in the Prior EIR.

As documented in the *Bedford Marketplace Air Quality and Greenhouse Gas Memorandum* (November 26, 2019) and the *Bedford Marketplace Soil Import/Export Air Quality Assessment* (August 9, 2019) prepared by Urban Crossroads and included in Appendix B, construction operations, including the import of soil by truck, would cause an exceedance of NO_x emissions as shown in Table 3.4.3.A below. Emissions associated with the option to import soil by truck is shown specifically in the table below. If the second option to import soil from PA 14 were implemented, those emissions are incorporated into the grading quantities and overall emissions would be reduced compared to importing soil by truck.

3.4.3.A: Unmitigated Modified Project Site Construction Emissions

Phase	Emissions (lbs/day)					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Summer						
2020 (Soil Import Process)	8.86	149.11	54.15	0.26	12.89	6.75
2020 (Construction Process)	4.97	50.27	39.65	0.12	10.89	6.11
2021 (Construction Process)	65.75	50.91	58.59	0.15	8.57	3.57
Winter						
2020 (Soil Import Process)	8.99	147.70	56.45	0.25	12.90	6.75
2020 (Construction Process)	5.00	50.27	36.91	0.11	10.89	6.11
2021 (Construction Process)	65.78	50.83	55.33	0.15	8.57	3.57
Maximum Daily Emissions	**65.78**	**149.11**	**58.59**	**0.26**	**12.90**	**6.75**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**YES**	**NO**	**NO**	**NO**	**NO**

The exceedance of the maximum daily threshold for NO_x can be mitigated through the use of Tier 4 engines for off-road construction equipment. Prior EIR Mitigation Measure 4.3.6.1E requires the use of Tier 4 engine technology on off-road construction equipment after January 1, 2015. Following implementation of Mitigation Measure 4.3.6.1E and new Mitigation Measure 4.3.6.1I, construction emissions would be reduced to less than significant as shown in Table 3.4.3.B below. Because the Prior EIR concluded NO_x emissions would remain significant and unavoidable even with implementation of mitigation, the Modified Project's NO_x impacts with implementation of revised Mitigation Measure 4.3.6.1E and new Mitigation Measure 4.3.6.1I are less severe and therefore reduced in comparison to the Approved Project.

3.4.3.B: Mitigated Modified Project Site Construction Emissions						
Phase	**Emissions (lbs/day)**					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Summer						
2020 (Soil Import Process)	4.49	94.52	51.69	0.26	10.51	4.56
2020 (Construction Process)	4.59	34.09	40.13	0.12	9.27	4.62
2021 (Construction Process)	65.41	46.37	59.21	0.15	8.39	3.39
Winter						
2020 (Soil Import Process)	4.62	93.11	53.99	0.25	10.51	4.57
2020 (Construction Process)	4.62	34.03	37.39	0.11	9.27	4.62
2021 (Construction Process)	65.44	46.29	55.95	0.15	8.39	3.40
Maximum Daily Emissions	**65.44**	**94.52**	**59.21**	**0.26**	**10.51**	**4.62**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

The increase of 143,730 square feet of commercial building area that includes a 135-room hotel over and above the Approved Project would incrementally increase operational air emissions. Table 3.4.3.C shows the increase in emissions from the Modified Project would not cause a new significant impact.

Table 3.4.3.C: Increase in Emissions from Modified Project Site						
Operational Activities – Summer Scenario	**Emissions (lbs/day)**					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Bedford Marketplace Maximum Daily Emissions	45.50	106.89	206.50	0.48	36.83	10.50
80 TSF Commercial Maximum Daily Emissions	12.97	67.29	99.94	0.36	24.08	6.61
Net Increase	***32.54***	***39.61***	***106.56***	***0.12***	***12.75***	***3.89***
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**
Operational Activities – Winter Scenario	**Emissions (lbs/day)**					

	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Bedford Marketplace Maximum Daily Emissions	42.24	109.60	194.87	0.46	36.83	10.50
80 TSF Commercial Maximum Daily Emissions	11.42	66.73	91.31	0.33	24.08	6.61
Net Increase	***30.82***	***42.87***	***103.56***	***0.12***	***12.74***	***3.89***
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

In summary, the proposed increase in soil import and grading activity associated with the Modified Project would cause an exceedance in NO_x emissions without mitigation. However, as specified in the Prior EIR, Mitigation Measure 4.3.6.1E requires the use of Tier 4 engine technology on off-road construction equipment, which would reduce impacts to less than significant. The increase in operational emissions would not exceed significance standards. Therefore, with implementation of the Mitigation Measures specified in the Prior EIR, the level of impact (less than significant with mitigation) remains unchanged from the Prior EIR. This topic will not be evaluated further in this SEIR.

(d) Expose sensitive receptors to substantial pollutant concentrations?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The soil import and construction operations have the potential to cause impacts to sensitive receptors. The haul route identified for importing off-site fill material would rely on local roadways (Minnesota Road to Sherborn Street to Magnolia Avenue to the I-15 Freeway) that do not have sensitive receptors and the I-15 Freeway, which has adjacent sensitive receptors, but is used as a regional truck route. Additional sensitive receptors are proximate to the Modified Project Site, such as residences in the Eagle Glen and Bedford Neighborhoods, the closest of which was used for this analysis. As such, the *Bedford Marketplace Air Quality and Greenhouse Gas Memorandum* (November 26, 2019) prepared by Urban Crossroads and included in Appendix B, includes a Localized Significance Threshold (LST) analysis based on SCAQMD methodology. The analysis quantified localized impacts (maximum daily emissions) at the nearest sensitive receptor compared to the thresholds established by the SCAQMD. During all phases of construction, the LST analysis determined no exceedances of SCAQMD thresholds would occur and impacts would be less than significant.

According to SCAQMD methodology, LSTs would apply to the operational phase of a project if the project includes stationary sources of emissions or attracts mobile sources that may spend long periods of time queuing and idling (such as warehouse or transfer facilities). Since the Modified

Project does not include such uses, due to the lack of stationary source emissions, no long-term localized significance thresholds would occur.

The Modified Project's impacts to sensitive receptors are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

(e) Create objectionable odors affecting a substantial number of people?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. Short-term odors can occur during construction both during grading and painting of structures, and long-term odors depend on the type of land use.

Although the Modified Project would result in a substantive increase in construction from nighttime soil import activities and daytime daily grading that may result in construction odors, these activities are temporary. Similarly, the long-term commercial land uses would also remain the same as the Approved Project, resulting in similar impacts as presented in the Prior EIR. In the same manner as determined in the Prior EIR, adherence to applicable provisions of SCAQMD Rules 402, 1108, and 113 would reduce construction nuisances from the Modified Project to a less than significant impact and no mitigation is required

The Modified Project proposes commercial land uses that would not generate offensive odors such as agricultural uses, wastewater treatment plants, or landfills. In the same manner as determined in the Prior EIR, operational odors from the Modified Project would be considered less than significant and no mitigation is required. The Modified Project's impacts are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

Cumulative Impacts Associated with the Proposed Project

Less Than Significant Impact/No Changes or No New Information Requiring Preparation of an EIR. As shown in the analysis above, the Modified Project would not exceed regional or local emissions thresholds established by SCAQMD for construction and operations. SCAQMD, in CEQA documents for which it is the lead agency, uses a zone of influence of 1 mile from the Modified Project Site for ambient pollutants and 500 feet for toxic air contaminants to identify cumulatively relevant projects. This represents a likely worst-case scenario and is more restrictive than most other lead agencies. Given the location of the Modified Project Site, no cumulatively relevant projects have been identified.

State CEQA Guidelines §15064(h)(4) states that "The mere existence of cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed Project's

incremental effects are cumulatively considerable." SCAQMD has developed a policy to address the cumulative impacts of CEQA projects. The policy holds that project impacts would be cumulatively considerable if they were to exceed the project-specific air quality significance thresholds. The analysis above demonstrates that emissions from the Modified Project can be mitigated below all SCAQMD CEQA thresholds related to air quality. Therefore, since no cumulatively relevant projects occur and the Modified Project's emissions are below significance thresholds, the Modified Project's contribution would not be cumulatively considerable.

Mitigation Measures Identified in Prior EIR and Applicable to Modified Project

The following mitigation measures from the Prior EIR, with the addition of new measure 4.3.6.1I, were found to be applicable to the Modified Project:

Air Quality	
4.3.6.1A	Prior to the issuance of a grading permit, the project developer shall require by contract specifications that contractors shall place construction equipment staging areas at least 200 feet away from sensitive receptors. Contract specifications shall be included in the project Specific Plan construction documents, which shall be reviewed by the City.
4.3.6.1B	Prior to the issuance of a grading permit, the project developer shall require by contract specifications that contractors shall utilize power sources (e.g., power poles) or clean-fuel generators. Contract specifications should be included in the Specific Plan construction documents, which shall be reviewed by the City.
4.3.6.1C	Prior to the issuance of a grading permit, the project developer shall require contract specifications that contractors shall utilize California Air Resources Board (CARB) Tier II Certified equipment or better during the rough/mass grading phase for the following pieces of equipment: rubber-tired dozers and scrapers. Contract specifications shall be included in the Specific Plan construction documents, which shall be reviewed by the City.
4.3.6.1D	Prior to issuance of building permits, the project applicant shall provide evidence to the City that his contractor uses 2010 and newer diesel haul trucks (e.g., material delivery trucks and soil import/export) to the extent feasible. If the project applicant and his contractor determine that 2010 model year or newer diesel trucks cannot be obtained, the project applicant shall notify the City that trucks with EPA 2007 model year NO_x emissions shall be utilized.

4.3.6.1E	Prior to issuance of building permits, the project applicant shall provide evidence to the City that his contractor use on-site construction equipment that meet EPA Tier 3 or higher emissions standards according to the following schedule: • Post-January 1, 2015: All off-road diesel-powered construction equipment greater than 50 hp shall meet the Tier 4 emission standards, where available. In addition, all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations. • A copy of each unit's certified tier specification, BACT documentation, and CARB or SCAQMD operating permit shall be provided at the time of mobilization of each applicable unit of equipment.
4.3.6.1F	The City shall encourage construction contractors to apply for SCAQMD "SOON" funds by advising project applicants and their contractors of this programs availability. Information on this program can be found at the following website: http://www.aqmd.gov/home/programs/business/businessdetail?title=off-road-diesel-engines&parent=vehicle-engineupgrades.
4.3.6.3A	Prior to the issuance of each building permit, the project applicant shall require by contract specifications that architectural coatings require the use of either HVLP spraying equipment or manual application techniques to apply architectural coatings. Contract specifications shall be included in the Specific Plan construction documents, which shall be reviewed by the City.
4.3.6.4A	Prior to issuance of each building permit associated with the Specific Plan, building and site plan designs shall ensure that the project's energy efficiencies surpass applicable 2008 California Title 24, Part 6 Energy Efficiency Standards by a minimum of 20 percent. Verification of increased energy efficiencies shall be documented in Title 24 Compliance Reports provided by the Applicant, and reviewed and approved by the City. Any combination of the following design features may be used to fulfill this requirement provided that the total increase in energy efficiency meets or exceeds 20 percent: • Exceed 2008 California Title 24 Energy Efficiency performance standards for water heating and space heating and cooling. • Increase in insulation such that heat transfer and thermal bridging is minimized.

	• Limit air leakage through the structure or within the heating and cooling distribution system to minimize energy consumption. • Incorporate dual-paned or other energy efficient windows. • Incorporate energy efficient space heating and cooling equipment. • Install interior and exterior energy efficient lighting which exceeds the 2008 California Title 24 Energy Efficiency performance standards including but not limited to automatic devices to turn off lights when they are not needed. • To the extent that they are compatible with landscaping guidelines established by the City, include shade producing trees, particularly those that shade paved surfaces such as streets and parking lots and buildings, within the project site. • Use light and off-white colors in the paint and surface color palette for project buildings to reflect heat away. • All buildings shall be designed to accommodate renewable energy sources, such as photovoltaic solar electricity systems, appropriate to their architectural design.
4.3.6.4B	Prior to issuance of each building permit associated with the Specific Plan, the following design features shall be implemented to reduce energy demand associated with potable water conveyance: • Landscaping palette emphasizing drought-tolerant plants; • Use of water-efficient irrigation techniques; and • U.S. EPA Certified WaterSense labeled or equivalent faucets, high-efficiency toilets (HETs), and water-conserving shower heads.
4.3.6.4E	The developer shall provide electric car charging infrastructure for multi-family residential and commercial land uses.
4.3.6.1H	The developer(s) within the multi-family and single family developments shall provide outside electric outlets and natural gas stub outs.
4.3.6.1I	When using construction equipment greater than 150 horsepower (>150 HP) during soil import/hauling activity, the Construction Contractor shall ensure that off-road diesel construction equipment complies with Environmental Protection Agency (EPA)/California Air Resources Board (CARB) Tier 4 emission standards or equivalent and shall ensure that all construction equipment is turned and maintained in accordance with the manufacturer's specifications.

This Page Intentionally Left Blank

3.4.4 Biological Resources

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	☒

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Summary of Impacts Identified in Prior EIR

a) Impact candidate, sensitive, or special status species

The Prior EIR determined the coastal California gnatcatcher (*Polioptila californica californica*) was the only endangered or threatened species with a potential to occur within the Approved Project. The coastal California gnatcatcher (CAGN) was not detected during site visits; however, suitable habitat occurred in the Riversidean sage scrub communities. The Prior EIR noted the CAGN was designated as a Covered Species Adequately Conserved under the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) with no additional conservation requirements. The Prior EIR noted vegetation clearing of occupied habitat within Public/Quasi Public lands and Criteria Area between March 1 and August 15 was prohibited. Development of CAGN habitat was identified in the Prior EIR as a significant impact, and appropriate mitigation was prescribed.

The Prior EIR identified the following seven special status wildlife species observed within the Approved Project during site visits:

- Bobcat (*Lynx rufus*)
- California horned lark (*Eremophila alpestris actia*)
- Coastal western whiptail (*Aspidoscelis tigris multiscutatus*);
- Cooper's hawk (*Accipiter cooperi*);
- Northern harrier (*Circus cyaneus*);
- San Diego desert woodrat (*Neotoma lepida intermedia*); and

- Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)

All seven special status species observed during site surveys were noted as being covered under the take and incidental take provisions of the MSHCP, and potential impacts to these species were mitigated through compliance and participation in the MSHCP, including payment of the required MSHCP impact fee.

The Prior EIR noted the Approved Project is located within the MSHCP Burrowing Owl Survey Area. Due to the presence of suitable burrowing owl (*Athene cunicularia*) habitat throughout the Approved Project, focused surveys for burrowing owl were conducted in 2009 and 2010. The focused burrowing owl survey determined that no burrowing owls, potential burrowing owl burrows, or diagnostic signs (e.g., whitewash, pellets, bones, or feathers) of burrowing owl were observed within the Approved Project boundary or a 150-meter (500-foot) buffer area. While no burrowing owls were identified, the Prior EIR noted suitable habitat is present within the Approved Project. Because the species is highly mobile, the EIR concluded the burrowing owl could occupy the site prior to development resulting in a potentially significant impact that required mitigation. The Prior EIR prescribed pre-construction survey mitigation to avoid impacts to the burrowing owl species.

As discussed in the Prior EIR, the Approved Project Specific would result in the removal of vegetation suitable for nesting migratory birds, including raptors. Impacts to nesting migratory birds were noted as being prohibited under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code. Because suitable habitat to support nesting migratory birds was present within the Approved Project, a potential for impacts to species that occupy the site prior to development existed. The Prior EIR prescribed pre-construction survey mitigation to avoid impacts to the nesting bird species.

b) Impact riparian habitats or other sensitive natural communities

The Prior EIR analyzed the project design feature included as part of the Approved Project to widen, stabilize, and restore Bedford Wash to improve its ability handle storm flows and avoid flooding while reducing scouring and erosion. The plans for Bedford Wash included habitat restoration within the wash and adjacent areas to replace California Department of Fish and Wildlife (CDFW) defined streambed and riparian jurisdictional areas temporarily and permanently impacted by the widening and stabilization activities. The Prior EIR identified the quantity of CDFW streambed and riparian areas that would be temporarily and permanently impacted. The Prior EIR noted most of the impacts to CDFW defined jurisdictional areas involved unvegetated streambed containing little to no riparian canopy. Impacts to CDFW jurisdictional habitat were identified as potentially significant and mitigation was prescribed.

As noted previously, the approved and planned widening, stabilization, and restoration improvements to Bedford Wash have been completed as part of the Approved Project. To permit those activities, the following Regulatory Permits and MSHCP Consistency Determination were issued:

- U.S. Army Corps of Engineers (Corps File No. SPL-2015-00361-ERS)
- California Department of Fish and Wildlife (Notification No. 1600-2015-0055-R6)
- Regional Water Quality Control Board (SARWQCB Project NO. 332014-24)
- U.S. Fish and Wildlife Service (FWS-WRIV-15B0271-16F0852)
- MSHCP Consistency Determination and Determination of Biologically Equivalent or Superior Preservation (DBESP) (FWS/CDFW-15BO0271-15CPA0281)

The Regulatory Permits and MSHCP Consistency authorized the widening and restoration of Bedford Wash, including improvements for flood protection. Buried rip-rap extending down to scour depth was permitted along both sides of Bedford Wash. Grade stabilizing structures were permitted perpendicular to flows. Several stormdrain outlet structures surrounded by a concrete structure were incorporated into the rip-rap lined banks to outlet storm flows on both sides of Bedford Wash. Additionally, two concrete crossings were permitted, at the far upstream and downstream limits within the Approved Project. The concrete crossings allow maintenance vehicles to cross Bedford Wash and access the bluff on the south side. Additionally, the Approved Project includes a future bridge crossing Bedford Wash that is authorized by the Regulatory Permits. The Regulatory Permits remain active and Approved Project activities authorized under the permits remain on-going.

As stated in the Prior EIR, the current AHSP was designed to reduce impacts to native habitat through the designation of 67.9 acres of native habitat included as permanent open space. Because the Approved Project contained measures to reduce impacts to habitat consistent with the MSHCP, impacts to Disturbed Riversidean Sage Scrub, Riversidean Sage Scrub, and Riversidean Sage Scrub/Chaparral habitats were considered to be less than significant and no mitigation was required.

Pursuant to the terms of the MSHCP and Implementing Agreement with the U.S. Fish and Wildlife Service (USFWS) and CDFW, compliance with provisions of the MSHCP provides full mitigation under CEQA, Federal Endangered Species Act (FESA), and California Endangered Species Act (CESA) for impacts to the species and habitats covered by the MSHCP. Therefore, impacts to sensitive communities would be reduced to a less than significant level.

c) Impact federally protected wetlands

The Prior EIR analyzed the widening, stabilization, and restoration of Bedford Wash and identified the quantity of on-site U.S. Army Corps of Engineers (USACE) jurisdictional waters that would be temporarily and permanently impacted. No federally protected wetlands were identified or impacted. Bedford Wash was determined to be an ephemeral drainage under the jurisdiction of the USACE.

Impacts to USACE non-wetland jurisdictional areas were identified as a significant impact and mitigation was prescribed. The widening, stabilization, and restoration of Bedford Wash has been implemented and is a current or existing condition.

d) Interfere with species movement or migratory wildlife corridors, or impede use of wildlife nurseries

As discussed in the Prior EIR, the Approved Project and surrounding areas were previously disturbed and diminished in quality either through past agricultural uses or the development of residential and commercial uses. The Approved Project had been insolated from nearby open spaces because of existing development. Bedford Wash was noted as providing an avenue for wildlife movement from the Santa Ana Mountains to the west, through the Approved Project, and to the east to Temescal Creek. The Prior EIR indicated the Bedford Wash would be widened and maintained in a semi-natural condition as an earthen bottomed channel and concrete sides as part of the Approved Project design, and this widening and restoration of the Wash would facilitate future wildlife movement through the area. The actual work within the widened Bedford Wash consisted of buried rip-rap extending down to scour depth and grade stabilizing structures perpendicular to flows. The result is a less impactful design than analyzed in the Prior EIR. The widening, stabilization, and restoration of Bedford Wash has been implemented and is a current or existing condition.

Due to the disturbed condition of the site and adjacent areas, the planned widening, stabilization, and restoration improvements to Bedford Wash that enhanced the ability of the Wash to function as a wildlife corridor, the proposed the Prior EIR found development of the Approved Project would not interfere with migratory fish or wildlife species movement and would not interfere with migratory wildlife corridors, or impede the use of native wildlife nursery sites resulting in a less than significant impact and no mitigation was required.

e) Conflict with local policies or ordinances protecting biological resources

The Prior EIR did not identify any local policies or ordinances protecting biological resources that the Approved Project was in conflict with, and impacts were determined less than significant.

f) Conflict with habitat conservation plans, natural community conservation plans, or other approved habitat conservation plans

Although the Approved Project was not covered by a conservation area delineated in the MSHCP, the Prior EIR noted the Approved Project was subject to provisions of the MSHCP. The Prior EIR noted these provisions included payment of mitigation fees by project proponents, and adherence to the requirements established in the MSHCP. The Prior EIR noted the City has adopted a Local Development Mitigation Fee to assist in the acquisition and maintenance of natural ecosystems pursuant to the terms of the MSHCP and Implementing Agreement with the USFWS and the CDFW.

Compliance with provisions of the MSHCP provides full mitigation under CEQA, FESA, and CESA for impacts to the species and habitats covered by the MSHCP. Therefore, impacts associated with compatibility of the Approved Project with the MSHCP were determined to be less than significant.

Impacts Associated with the Modified Project

(a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The *Biological Technical Report* (BTR) prepared for the Modified Project (Carlson Strategic Land Solutions, October 2019) contained in Appendix C determined none of the four potentially occurring special status plant species were observed on the Modified Project Site and suitable habitat was absent. The BTR also determined eight of ten potentially occurring special status wildlife species were not observed on the Modified Project Site and habitat was absent. Impacts to these species are therefore considered less than significant. The Modified Project Site does contain suitable habitat for the California Horned Lark and limited habitat for the red-diamond rattlesnake. Impacts to these two species are considered significant and mitigation is required, in the same manner as identified in the Prior EIR for different special status species.

A pre-construction nesting bird survey requirement as outlined in Prior EIR Mitigation Measure 4.4.5.2B is in place to avoid impacts to nesting birds, including the California Horned Lark, that are protected under the MBTA from development on the Modified Project Site. The BTR also recommended biological monitoring during initial ground disturbances to identify and locate any red-diamond rattlesnakes within the Modified Project Site to avoid impacts to the snake species. The biological monitoring provisions will be added to Prior EIR Mitigation Measure 4.4.5.2B. The Modified Project's impacts to special status species are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

(b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. As noted previously, the Approved Project's widening, stabilization, and restoration improvements to Bedford Wash have been mostly completed and remain active. The improvements constructed and currently in place include concrete ingress and egress ramps, buried riprap slope protection, and a concrete crossing. In its improved condition, Bedford Wash exhibits biological and

physical indicators of Waters of the State and MSHCP Features through the presence of channel bed and bank, extending from top of bank to top of bank. The BTR found 0.20 acres of CDFW Waters of the State and MSHCP Features located in the southern portion of the Modified Project Site in Bedford Wash.

Two components of the Modified Project could affect the jurisdictional areas of Bedford Canyon Wash. One component is a storm drain pipe from the proposed on-site detention basin that must outlet into Bedford Wash. The Modified Project proposes to outlet the storm drain pipe with the same design as the other outlet already installed into the improved Bedford Wash channel. The storm drain pipe would outlet through a concrete structure constructed into the rip-rap lined bank of Bedford Wash, which would result in approximately 0.01 acre of modification to the rip-rap lined bank of Bedford Wash. The outlet structure would be constructed on the downstream concrete crossing to avoid impacts to the soft bottom portion of Bedford Wash. The outlet structure would not impact jurisdictional limits of Waters of the United States, but would impact Waters of the State and MSHCP Features. The proposed outlet structure is located in an area that was previously disturbed through authorization of Regulatory Permits and MSHCP Consistency Determination for the widening and restoration of Bedford Canyon Wash, and those permits remain active. No new impacts to Waters of the State or MSHCP Features would occur, and no additional Regulatory Permits or mitigation is required.

The second component of the Modified Project that could affect the jurisdictional areas of Bedford Wash would occur if Soil Import Alternative 2 is selected for importing fill soil. As described in Chapter 2.0, this alternative would involve importing soil from Planning Area 14 on the south side of Bedford Wash, crossing the Wash at the existing downstream concrete crossing, and onto the Modified Project Site. The placement of temporary soil on the concrete pad would cover an area of 0.09 acre of Waters of the State/MSHCP Features, which matches the area of the existing concrete pad crossing. No temporary soil would be placed in the soft-bottom portion of Bedford Wash. The proposed ramp is located in an area that consists of existing concrete and was previously disturbed through authorization of Regulatory Permits for the widening and restoration of Bedford Canyon Wash, and those permits remain active. No new impacts to Waters of the State or MSHCP Features would occur, and no additional Regulatory Permits or mitigation is required.

The Modified Project's impacts to State and MSHCP jurisdictional areas are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. As discussed in item b), the Approved Project's planned widening, stabilization, and restoration improvements to Bedford Wash have been mostly completed and remain active. In its improved condition, Bedford Wash exhibits biological and physical indicators of Waters of the United States through the presence of channel bed and bank, extending from top of bank to top of bank. The BTR found 0.10 acres of Waters of the United States located in the southern portion of the Modified Project Site in Bedford Wash.

As discussed in item b), two components of the Modified Project could affect the jurisdictional areas of Bedford Canyon Wash. One component is a storm drain pipe from the proposed on-site detention basin that must outlet into Bedford Wash. The storm drain pipe would outlet through a concrete structure constructed into the rip-rap lined bank of Bedford Wash, which would not impact jurisdictional limits of Waters of the United States.

As discussed in item b), the second component of the Modified Project that could affect the jurisdictional areas of Bedford Wash would occur if Soil Import Alternative 2 is selected for importing fill soil from PA 14, across Bedford Wash, and onto the Modified Project Site. The placement of temporary soil on the concrete pad would cover an area of 0.06 acres of Waters of the United States, which matches the area of the existing concrete pad crossing. No temporary soil would be placed in the soft-bottom portion of Bedford Wash. The proposed ramp is located in an area that consists of existing concrete and was previously disturbed through authorization of Regulatory Permits for the widening and restoration of Bedford Canyon Wash, and those permits remain active. No new impacts to Waters of the United States would occur, and no additional Regulatory Permits or mitigation is required. The Modified Project's impacts to Federal jurisdictional areas are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

(d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. Bedford Wash serves a function in local wildlife movement as a connection between the Santa Ana Mountains and Lake Matthews and across Temescal Creek. The Wash provides a connection between large areas of undeveloped land, which may be utilized for wildlife movement. With the prior implementation of the widened and restored Bedford Canyon Wash, it will continue to

provide a valuable linkage for wildlife. Implementation of the Modified Project would not impact the ability of Bedford Wash to serve as a wildlife movement corridor. No impacts to wildlife movement would result from the Modified Project.

Implementation of the Modified Project would remove vegetation that could impact nesting birds. A pre-construction nesting bird survey requirement as outlined in Prior EIR Mitigation Measure 4.4.5.2B to avoid impacts to nesting birds protected under the MBTA from development on the Modified Project Site. The Modified Project's impacts to wildlife corridors and migratory bird species are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

(e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The City does not have any local policies or ordinances that protect biological resources. Therefore, no impacts would occur, and no mitigation is necessary. The Modified Project's impacts are consistent with the impacts identified in the Prior EIR and the level of impact (no impact) remains unchanged. This topic will not be evaluated further in this SEIR.

(f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project Site is located in the Temescal Canyon Area Plan within the MSHCP. An MSHCP Consistency Determination has been prepared for the Modified Project (Carlson Strategic Land Solutions, October 2019). As discussed previously, storm drain outlet will be installed within the buried rip-rap slope protection of Bedford Wash, with the outlet opening at the existing concrete Wash crossing. In the event Soil Import Alternative 2 is implemented, soil will be temporarily placed across the existing concrete crossing and then removed once soil import and grading operations are completed. Since the proposed outlet structure under both soil import alternatives and the temporary soil bridge included Soil Import Alternative 2 are located areas of Bedford Wash previously disturbed through authorization of Regulatory Permits and MSHCP Consistency for the widening and restoration of the Wash, no new impacts to MSHCP Riparian/Riverine Features would occur.

The Modified Project Site is located in an MSHCP defined Narrow Endemic Plants survey area (Survey Area Number 7). As concluded in item a), no special status plant species were observed on the Modified Project Site and none are expected to occur due to the lack of suitable habitat.

Implementation of the Modified Project under either soil import alternative would not impact Narrow Endemic Plants and would not conflict with an approved conservation plan.

The Modified Project Site is located in an MSHCP defined burrowing owl (BUOW) survey area, and a series of BUOW surveys were conducted per MSHCP protocol. While potentially suitable habitat exists onsite, no BUOW, suitable burrows, or signs of BUOW were observed. Since BUOW are a migratory species, a pre-construction BUOW survey is required prior to ground disturbance. A pre-construction BUOW survey requirement as outlined in Prior EIR Mitigation Measure 4.4.5.2A to avoid impacts to BUOW from development on the Modified Project Site.

The Modified Project's impacts regarding the MSHCP are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

Cumulative Impacts Associated with the Proposed Project

Less Than Significant Impact/No Changes or No New Information Requiring Preparation of an EIR. Direct impacts to nesting birds, including the BUOW, from development of the Modified Project may occur should construction activities and vegetation removal take place during the typical nesting season, under both of the soil import alternatives. However, implementation of Prior EIR Mitigation Measures 4.4.5.2A and 4.4.5.2B as modified by the addition of BMPs recommended by the BTR will ensure impacts to special status species or their habitats are minimized, and reduce the Modified Project's contribution to cumulative impacts to less than significant.

The Modified Project's proposed storm drain pipe that would outlet into Bedford Wash and the temporary soil bridge across the Wash included in Soil Import Alternative 2 would involve impacts to the Wash and jurisdictional Waters of the State and MSHCP Features. The temporary soil bridge would be placed on an existing concrete crossing and would not impact jurisdictional areas. Since the proposed storm drain outlet is located in an area of Bedford Wash previously disturbed through authorization of Regulatory Permits and MSHCP Consistency for the widening and restoration of Bedford Canyon Wash, no new impacts to MSHCP Riparian/Riverine Features would occur.

By design, the MSHCP covers a large geographical area so that numerous special-status species and sensitive habitats are protected throughout its boundary. The MSHCP was approved to offset the cumulative negative effect future development has on the covered habitats and species. Because the MSCHP provides a regional and comprehensive approach to conservation planning, impacts to MSHCP covered habitats and species are considered less than significant if a development project is consistent with the MSHCP. Since the Modified Project has been shown to be consistent with the MSHCP, the Modified Project's contribution to cumulative impacts would be less than significant.

Mitigation Measures Identified in Prior EIR and Applicable to Modified Project

The following mitigation measures, with minor edits, from the Prior EIR were found to be applicable to the Modified Project:

Biological Resources	
4.4.5.1A	If grading and construction activities begin during the California gnatcatcher breeding season (February 15 through August 30), a qualified biologist shall survey all potential nesting vegetation within and adjacent to the site for nesting birds, prior to commencing vegetation removal. Surveys shall be conducted at the appropriate time of day. If no nesting birds were observed, project activities may begin. If an active bird nest is located, the nest site shall be fenced a minimum of 500 feet in all directions, and this area shall not be disturbed until after the nest becomes inactive, the young have fledged, the young are no longer being fed by the parents, the young have left the area, or the young will no longer be impacted by the activities. Alternatively, a qualified biologist may determine that construction can be permitted within the buffer areas provided the qualified biologist develops a monitoring plan to prevent any impacts while the nest continues to be active (eggs, chicks, etc.). This monitoring plan will be submitted to the City of Corona for approval prior to work within the buffer.
4.4.5.2A	Pre-construction presence/absence surveys for burrowing owl within the survey area where suitable habitat is present shall be conducted by a qualified biologist (as determined by the City of Corona) within 30 days prior to the commencement of ground disturbing activities. If active burrowing owl burrows are detected during the breeding season, all work within 300 feet of any active burrow will be halted until that nesting effort is finished. The on-site biologist will review and verify compliance with these boundaries and will verify the nesting effort has finished. Work can resume when no other active burrowing owl burrows are found. If active burrowing owl burrows are detected outside the breeding season, then passive and/or active relocation may be approved following consultation with CDFW and/or USFWS. If owls are found to be present on site, the CDFW should be notified within three days of the detection of occupied burrows, and a project burrowing owl conservation strategy should be developed in cooperation with the CDFW, USFWS, and the Western Riverside County Regional Conservation Authority. One-way doors may be installed as part of a passive relocation program. Burrowing owl burrows shall be excavated with hand tools by a qualified biologist when determined to be unoccupied, and backfilled to ensure

	that animals do not reenter the holes/dens. Upon completion of the survey and any follow-up construction avoidance management, a report shall be prepared and submitted to the City for mitigation monitoring compliance record keeping.
4.4.5.2B	A Biological Monitor shall be onsite during the initial ground disturbances to identify and locate any red-diamond rattlesnake within the PAs 11 and 12A. Should any red-diamond rattlesnake species be located within the Project site, construction and earthwork within the immediate area of the identified species shall cease to allow for the species to vacate or be relocated from the area safely. Work can resume when the species has vacated the immediate ground disturbances work area. To reduce harm to the red-diamond rattlesnake and other species in the areas being disturbed, the following best management practices shall be added to the soil import and grading plans: • Work area limits will be defined and respected. All grading areas will have their boundaries clearly flagged or marked before Project implementation and all disturbances will be confined to the flagged areas. All key Project personnel will be instructed that their activities must be confined to locations within the flagged areas. Disturbance beyond the actual grading zone is prohibited without site-specific surveys. • Cleared or trimmed non-native, exotic vegetation, and woody debris will be disposed of in a legal manner at an approved disposal site. • Employees, contractors, and site visitors will be prohibited from collecting plants and wildlife. • Water pollution and erosion control plans will be developed and implemented in accordance with SWPPP requirements. • Access to construction sites will be via preexisting access routes. • Construction equipment will be properly maintained; construction employees and contractors will be trained on proper implementation and monitoring of BMPs; and procedures will be implemented to minimize the likelihood of hazardous spills and to control sediment-laden runoff. • Effective perimeter control BMPs to control discharge of pollutants from the Project site during construction. • All temporary construction-related night lighting used in onsite development areas will be shielded and/or directed downward to avoid indirect impacts to nocturnal wildlife such that night lighting could increase predation rates.

	• All construction contractors, subcontractors, and employees will comply with the litter and pollution laws and will institute a litter control/removal program during the course of construction activities to reduce the attractiveness of the area to opportunistic predators such as coyotes, opossums, and common ravens. • Active nests (nests with chicks or eggs) cannot be removed or disturbed. Nests may be removed or disturbed by a qualified biologist, if not active. The removal of potential nesting bird habitat will be conducted outside of the nesting season (February 15 to September 15~~August 31~~) to the extent feasible. If grading or site disturbance is to occur between February 15 to September 15~~August 31~~, a nesting bird survey shall be conducted by a qualified biologist ~~(as determined by the City of Corona)~~ within no more than five days ~~72 hours~~ of scheduled vegetation removal, to determine the presence of nests or nesting birds. If active nests are identified, the biologist will establish buffers around the vegetation (500 feet for raptors and sensitive species, 200 feet for non-raptors/non-sensitive species). All work within these buffers will be halted until the nesting effort is finished (i.e. the juveniles are surviving independent from the nest). The on-site biologist will review and verify compliance with these nesting boundaries and will verify the nesting effort has finished. Work can resume when no other active nests are found. Alternatively, a qualified biologist may determine that construction can be permitted within the buffer areas and would develop a monitoring plan to prevent any impacts while the nest continues to be active (eggs, chicks, etc.). Upon completion of the survey and any follow-up construction avoidance management, a report shall be prepared and submitted to the CDFW~~City~~ for mitigation monitoring compliance record keeping. If vegetation clearing is not completed within five days ~~72 hours~~ of a negative survey, the nesting survey must be repeated to confirm the absence of nesting birds.
4.4.5.3A	Prior to the issuance of grading permits for the affected jurisdictional areas, the project applicant shall provide evidence to the City that a Section 404 Permit from the USACE, a Section 401 Permit from the RWQCB, and a Section 1602 Streambed Alteration Agreement from the CDFW have been obtained for impacts to jurisdictional waters in the project site.
4.4.5.3B	Prior to the issuance of grading permits for the affected jurisdictional areas, a Determination of Biological Superior or Equivalent Preservation (DBESP) shall be submitted to the Riverside Conservation Authority (RCA) identifying potential impacts to riparian/riverine areas, discussing why avoidance of impacts to riparian/riverine areas was not feasible, and identifying compensation for the loss of riparian/riverine areas.

4.4.5.3C	The Applicant shall mitigate for the permanent loss of USACE and CDFW jurisdictional and MSHCP riparian/riverine resources on site at a 2:1 ratio. Mitigation may occur on-site within Bedford Canyon Wash or one of its tributaries; mitigation may occur through applicant-sponsored mitigation at an off-site location within the MSHCP boundaries: or mitigation may occur through purchase of credits at an approved mitigation bank or in-lieu fee program such as the Santa Ana Watershed Association (SAWA) In-Lieu Fee Wetland Creation Program or equivalent, if available.
4.4.5.3D	Following the completion of grading, all of USACE and CDFW jurisdictional areas that will be temporarily impacted shall be restored using native vegetation.
4.4.5.3E	For Bedford Canyon Wash design options 2 and 3, it is anticipated that periodic maintenance may be necessary within the soft bottom channel/Bedford Canyon Wash, such as trash and invasive species removal; riprap and grade control structure repair; therefore, an Operations and Maintenance Manual or Long-Term Management Plan shall be prepared, subject to the approval of the Resource Agencies, which will identify the appropriate methods and timing regarding the maintenance of the restored wash.

This Page Intentionally Left Blank

3.4.5 Cultural Resources

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resources as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resources pursuant to §15064.5?	☐	☐	☐	☒
c) Directly or indirectly destroy a unique paleontological resource or site of unique geologic feature?	☐	☐	☐	☒
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒

Summary of Impacts Identified in Prior EIR

a) Impact historic resources

The Prior EIR concluded no resources, structures, or features were located within the Approved Project boundaries. Consequently, the Prior EIR concluded the Approved Project would not impact historic resources.

b) Impact archaeological resources

Based on the results of literature review and field surveys, the Prior EIR concluded the Approved Project did not contain archaeological or cultural resources and the probability of such resources being unearthed during Approved Project construction was very low. However, during separate SB 18 consultations with the Pechanga and Soboba Tribes, the Tribes requested that Native American monitors be present on site during all clearing, rough grading, and excavation activities due to the potential for such activities to unearth ancient remains and related artifacts from sacred burial sites. In order to ensure that cultural resources were identified during earthmoving activities, the Prior EIR included mitigation requiring the project Applicant retain a qualified archaeologist to direct an archaeological monitoring program during project construction. While the possibility of finding archaeological resources within the AHSP boundary was very remote, grading of the Approved Project could have uncovered previously undetected subsurface archaeological resources which resulted in a significant impact and mitigation in the form of monitoring was prescribed. The monitoring would be directed by a qualified archaeologist with assistance from Native American monitors. The Prior EIR concluded less than significant impacts with mitigation.

c) Impact paleontological resources

The Prior EIR found the Approved Project includes a high paleontological sensitivity area, indicating fossils are likely at or below four feet below ground surface. Since the possibility of discovering paleontological resources within the AHSP boundary was high, the Approved Project could have resulted in the discovery of previously undetected subsurface resources resulting in a significant impact. Mitigation in the form of paleontological monitoring conducted by a qualified paleontologist was prescribed. The Prior EIR concluded less than significant impacts with implementation of mitigation.

d) Impact human remains

The Prior EIR noted the AHSP boundary encompassed undeveloped land that exhibited no evidence suggesting the area had been utilized in the past for human burials. The Prior EIR noted compliance with State Health and Safety Code 7050.5 dictated procedures to be followed should human remains be discovered during grading or construction activities. These existing requirements were imposed on any construction activity in which human remains are detected. Compliance with State law would have

ensured that impacts related to the discovery of buried human remains would be less than significant and no mitigation was required.

Impacts Associated with the Modified Project

(a) Cause a substantial adverse change in the significance of a historical resources as defined in §15064.5?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. Cultural and Paleontological Resources Assessments (Duke Cultural Resources Management, August and November 2019) was prepared for the Modified Project and are included as Appendix D to SEIR No. 2. The cultural resource record search did not reveal any cultural resources on the Modified Project Site. However, seventeen previously recorded cultural resources were identified within one-mile buffer of the Modified Project Site, none associated with historic structures. The field survey confirmed the Modified Project Site contains no historic structures or evidence of prior historic structures.

The Modified Project would extend the AHSP boundary to the east. The cultural resources study determined development of the Modified Project Site would have no impact on historic resources because the Modified Project Site is vacant, and no historic resources are present. The Modified Project's impacts to historic resources are consistent with the impacts identified in the Prior EIR and the level of impact (no impact) remains unchanged. This topic will not be evaluated further in this SEIR.

(b) Cause a substantial adverse change in the significance of an archaeological resources pursuant to §15064.5?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The cultural and paleontological resources assessment prepared for the Modified Project Site included background research and field survey to identify cultural resources. The cultural resources record search did not reveal any cultural resources within the Modified Project Site but did note seventeen previously recorded cultural resources located within a one-mile. The field survey identified one isolated prehistoric artifact, a trifacial granite mano/shaping tool, within the southeast portion of the Modified Project Site west of Bedford wash, in the area of the proposed detention basin. In addition to the prehistoric isolated artifact observed during the field survey, five artifacts and one potential archaeological feature were observed in 2018 during construction monitoring within the Approved Project. Based on the prehistoric isolated artifact observed on the Modified Project Site and the resources observed previously during grading of the Approved Project, development of the Modified Project may unearth previously undiscovered historic and pre-historic archaeological resources resulting in a significant impact requiring mitigation. An archaeological monitoring requirement to be directed by a qualified archaeological monitor during project earthmoving activities is outlined in Prior

EIR Mitigation Measure 4.5.6.1A. The measure includes preparation of an Archaeological Resources Mitigation Monitoring Plan and assistance by Native American monitors.

In accordance with SB 18 and AB 52, invitations to consult were distributed to Native American tribes in October 2019. Four tribes (Gabrieleno, November 5, 2019; Rincon, November 20, 2019; Pechanga, November 27, 2019; Soboba, December 7, 2019) requested formal consultation. It is worth noting the City consulted with the Pechanga and Soboba Tribes on the original SP approval and all prior amendments. As a result of the original consultations and mitigation measures, the two Tribes shared tribal monitoring duties during all rough grading activities that took place on the Approved Project site as part of Phase 1 construction of Arantine Hills including the approximately 10-acre portion of the proposed 21.7-acre Bedford Marketplace site that was previously graded.

The current status of tribal consultation is the following:

- Gabrieleno – Completed February 18, 2020;
- Rincon – Completed as of January 29, 2020;
- Pechanga – Completed as of January 31, 2020; and
- Soboba – Completed February 3, 2020.

As a result of these consultations, the Rincon, Pechanga, and Soboba Tribes have agreed with the language of Prior EIR Mitigation Measures 4.5.6.1A through 4.5.6.1D, as modified to reflect the Planning Area naming changes proposed as part of the Modified Project (i.e., AHSP Amendment No. 3). The Gabrieleno and Rincon Tribes request that their standard mitigation language be incorporated into this SEIR. The Pechanga and Soboba Tribes have already agreed to the mitigation measures from the Prior EIR, both Tribes have been consulted with regarding the Approved Project since its inception, and both Tribes were actively involved as tribal monitors during rough grading of approximately 10 of the 21.7-acre Bedford Marketplace site. For these reasons, Prior EIR Mitigation Measures 4.5.6.1A through 4.5.61.D will remain as shown at the end of this section.

Soil Import Alternative 2 involves the excavation of soil in PA 14 and hauling the soil across a temporary soil bridge across Bedford Wash on the existing concrete crossing to the Modified Project Site (revised PA 11 and a portion of new PA 12A). PA 14 was graded previously as part of the Approved Project and is currently a rough graded pad at the established elevation. As part of the previous grading operations, PA 14 was over-excavated approximately 5 to 7 feet below the current elevation. These soils were removed, blended, replaced, and compacted to 90%. Under Soil Import Alternative 2, soil would be removed from PA 14 to a depth approximately 13 feet below the current pad elevation. This will require the excavation of 5 to 7 feet below the new pad elevation, disturbing the underlying native soils with a very low probability, but nonetheless a potential, for containing

tribal cultural resources. This is considered a significant impact and mitigation is required. As noted above, the Prior EIR includes Mitigation Measure 4.5.6.1A requiring archaeological monitoring. The measure will be revised to include monitoring within the Modified Project Site (PAs 11 and12A) and within the Approved Project (PA 14) to mitigate potential impacts should Soil Import Alternative 2 be implemented.

The Modified Project's impacts to archeological resources are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

c) Directly or indirectly destroy a unique paleontological resource or site of unique geologic feature?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. Research conducted as part of the cultural and paleontological resources assessment prepared for the Modified Project Site found multiple fossil localities documented in the Modified Project vicinity. As documented in the Prior EIR, there is a high sensitivity for paleontological resources within the Modified Project Site. Deposits of high paleontological sensitivity may be encountered in native soils during deep excavation in the northwest portion of the Modified Project Site (PA 11) and in ground disturbances at the surface of the southeast portion of the Modified Project Site (PA 12A). This ground disturbance would have the potential to unearth and impact unique paleontological resources resulting in a significant impact requiring mitigation. An archaeological monitoring requirement to be directed by a qualified archaeological monitor during project earthmoving activities is outlined in Prior EIR Mitigation Measures 4.5.6.2A, B, and C. The measures include preparation of a Paleontological Resource Impact Mitigation Program (PRIMP), presence of a paleontological monitor during earthmoving activities, and a treatment process/plan to be implemented if paleontological resources are unearthed.

Soil Import Alternative 2 involves the excavation of soil in PA 14 and hauling the soil across a temporary soil bridge across Bedford Wash on the existing concrete crossing and to the Modified Project Site (revised PA 11 and a portion of new PA 12A). PA 14 was graded previously as part of the Approved Project and is currently a rough graded pad at the established elevation. As part of the previous grading operations, PA 14 was over-excavated approximately 5 to 7 feet below the current elevation. These soils were removed, blended, replaced, and compacted to 90%. Under Soil Import Alternative 2, soil would be removed from PA 14 to a depth approximately 13 feet below the current pad elevation. This will require the excavation of 5 to 7 feet below the new pad elevation, disturbing the underling native soils with a very low but nonetheless a potential for containing paleontological resources. This is considered a significant impact and mitigation is required. As noted above, the Prior EIR includes Mitigation Measures 4.5.6.2A, B, and C that will result in preparation of a PRIMP,

presence of a paleontological monitor during earthmoving activities, and a treatment process/plan to be implemented if paleontological resources are unearthed requiring archaeological monitoring. The measure will be revised to include monitoring within the Modified Project Site (PAs 11 and12A) and within the Approved Project (PA 14) to mitigated potential impacts should Soil Import Alternative 2 be implemented.

The Modified Project's impacts to paleontological resources are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

(d) Disturb any human remains, including those interred outside of formal cemeteries?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The cultural and paleontological resources assessment prepared for the Modified Project confirmed there is no evidence suggesting the Modified Project Site has been utilized in the past for human burials. The assessment noted existing regulations are in place dictating procedures should human remains be discovered during grading or construction activities within the area, per State Health and Safety Code 7050.5. These procedures were also noted in the Prior EIR. The Modified Project's impact regarding disturbances to human remains is consistent with the impacts identified in the Prior EIR and the level of impact (no impact) remains unchanged. This topic will not be evaluated further in this SEIR.

Cumulative Impacts Associated with the Proposed Project

Less Than Significant Impact/No Changes or No New Information Requiring Preparation of an EIR. Although the Modified Project would expand the AHSP boundary, project-specific impacts to cultural resources were determined to be the same as found in the Prior EIR. The Prior EIR found potential impacts associated with human remains would be reduced to a less than significant level through adherence to existing State law. There are no other development projects that would, in combination with the proposed project, result in any significant cumulative impacts to historical, archaeological, paleontological resources, or human remains. The Modified Project, in a similar manner as the Approved Project and other projects within the City, would be required to adhere to similar mitigation measures that would reduce the potential for any individual or cumulative impacts. Therefore, the level of impact (less than significant with mitigation) remains the same as the level cited in the Prior EIR. This topic will not be evaluated further in this SEIR.

Mitigation Measures Identified in Prior EIR and Applicable to Modified Project

The following mitigation measures, with minor edits, from the Prior EIR were found to be applicable to the Modified Project:

Cultural Resources	
4.5.6.1A	The applicant shall retain a qualified archaeological monitor who shall prepare an Archaeological Resources Mitigation Monitoring Plan in consultation with the Native American Tribe. The qualified archaeological monitor shall attend all pre-grading meetings to inform the grading and excavation contractors of the archaeological resources mitigation program and shall instruct them with respect to its implementation. The qualified archaeological monitor shall be on site at all times during the initial phases of clearing and rough grading in the Modified Project Site (PAs 11 and 12A) and Approved Project (PA 14) if Soil Import Alternative 2 is implemented to inspect cuts for archaeological and cultural resources. If such resources are discovered, and are in danger of loss and/or destruction, the qualified archaeological monitor shall recover them. In instances where recovery requires an extended salvage time, the qualified archaeological monitor shall be allowed to temporarily direct, divert or halt grading to allow recovery of resource(s) in a timely manner. Recovered archaeological resources, along with copies of pertinent field notes, photographs, and maps, shall be deposited in a certified curation facility that meets the standards of the California Office of Historic Preservation. The resources shall be recorded in the California Archaeological Inventory Database. All sacred sites, should they be encountered within the project area, shall be avoided and preserved as the preferred mitigation, if feasible. A final monitoring report shall be submitted to the City within 30 days of the end of monitoring activities.
4.5.6.1B	All grading, excavation, and ground-breaking activities shall be monitored by a qualified tribal monitor(s). The project applicant shall pay all fees associated with such tribal monitors(s) and shall contact the Native American Tribe at least 30 days before pulling grading permits from the City. In the event of the discovery of Native American burial(s), the qualified tribal monitor(s) will have the authority to temporarily stop and redirect grading activities, in consensus with the archaeological monitor. The tribal monitor(s) shall attend all pre-grading meetings to assist the archaeological monitor with informing the grading and excavation contractors of the archaeological resources mitigation program and instruct them with respect to its implementation. The qualified tribal monitor shall be on site at all times during clearing and rough grading to inspect cuts for archaeological and cultural resources.
4.5.6.1C	The developer shall enter into a Treatment and Disposition Agreement with the appropriate Native American Tribe(s) prior to the issuance of a grading permit. The Treatment and Disposition Agreement shall identify the treatment of cultural items (artifacts) and the treatment and the disposition of human remains.

4.5.6.1D	Unless otherwise required by law, the site of any reburial of Native American human remains or cultural artifacts shall not be disclosed and is not subject to public disclosure requirements of the California Public Records Act, pursuant to the specific exemption set forth in California Government Code Section 6254(r).
4.5.6.2A	Prior to the issuance of grading permits, the project proponent shall submit to and receive approval from the City, a Paleontological Resource Impact Mitigation Program (PRIMP). The PRIMP shall include the provision of a trained paleontological monitor during on-site soil disturbance activities on the north and south sides ~~side~~ of Bedford Wash within the Modified Project Site (revised PA 11 and new PA 12A~~PAs 16 and 17~~) and Approved Project (PA 14) if Soil Import Alternative 2 is implemented ~~boundary~~. The monitoring for paleontological resources shall be conducted on a full-time basis during the rough-grading phases of the Modified Project Site within native soils that have the potential to harbor paleontological resources.
4.5.6.2B	The paleontological monitor shall be equipped to rapidly remove any large fossil specimens encountered during excavation. During monitoring, samples of soil shall be collected and processed to recover micro-vertebrate fossils. Processing shall include wet screen washing and microscopic examination of the residual materials to identify small vertebrate remains.
4.5.6.2C	If paleontological resources are unearthed or discovered during excavation of the AHSP, the following recovery processes shall apply: • Upon encountering a large deposit of bone, salvage of all bone in the area shall be conducted with additional field staff and in accordance with modern paleontological techniques. • All fossils collected during the project shall be prepared to a reasonable point of identification. Excess sediment or matrix shall be removed from the specimens to reduce the bulk and cost of storage. Itemized catalogs of all material collected and identified shall be provided to the museum repository along with the specimens. • A report documenting the results of the monitoring and salvage activities and the significance of the fossils shall be prepared. • All fossils collected during this work, along with the itemized inventory of these specimens, shall be deposited in a museum repository (such as the Western Center for Archaeology & Paleontology, the Riverside Metropolitan Museum, or the San Bernardino County Museum) for permanent curation and storage.

3.4.6 Geology and Soils

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
a) (i) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
a) (ii) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?	☐	☐	☐	☒
a) (iii) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?	☐	☐	☐	☒

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
a) (iv) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

Summary of Impacts Identified in Prior EIR

a) (i) Risk from rupture of Alquist-Priolo designated earthquake fault

The Prior EIR acknowledged the Approved Project is located in a seismically active region, but found the AHSP boundary would not have resulted in the development of structures within an Alquist Priolo Earthquake Fault Zone. The nearest known active earthquake fault was identified as the Elsinore Fault Zone located approximately 0.5 mile southwest of the Approved Project. In the absence of an active fault located on site, the Prior EIR concluded no fault rupture hazard would have occurred and no mitigation was required.

a) (ii) Risk from strong seismic ground shaking

The Prior EIR acknowledged ground shaking resulting from activity on local faults would have been felt within the Approved Project area during a seismic event. The Prior EIR noted all future construction and development resulting from implementation of the Approved Project would be required to comply with applicable provisions of the most recent adopted version of the California Building Code (CBC) and the City's Municipal Code. These codes and regulations detail specific measures regarding structural, mechanical, electrical, and plumbing construction practices including seismic design parameters to minimize the risk of loss, injury, or death resulting from strong ground shaking.

The Prior EIR also noted State law prohibits the placement of habitable structures within 50 feet of an active fault. Adherence to the CBC and the Municipal Code, which is required of all construction within the City, would reduce potential impacts associated with this issue to a less than significant level. These provisions along with project-specific geotechnical recommendations from the Approved Project's geotechnical and soil studies were required by Prior EIR Mitigation Measures 4.6.6 A through F and 4.6.6.2A The Prior EIR concluded a less than significant impact from strong seismic ground shaking would occur with implementation of these measures.

a) (iii) Risk from seismic-related ground failure, including liquefaction

Subsidence and Seismic Settlement. The Prior EIR noted land subsidence had been identified in the Chino region and the most northerly portion of the City. These subsidence events resulted from pumping drawdown of the regional groundwater table. The Prior EIR noted there were no signs of subsidence in the City south of the Prado Flood Control Basin, which had experienced significant regional subsidence. Since the AHSP boundary is located southeast of the Prado Flood Control Basin area, which had not shown indications of subsidence, impacts associated with this issue were considered to be less than significant and no mitigation was required.

The Prior EIR found the Approved Project did not include any activity known to cause subsidence-related damage (e.g., oil, gas, or groundwater extraction). The Prior EIR found AHSP boundary was underlain by relatively dense alluvial and dense sedimentary bedrock materials that have a low potential for subsidence or settlement, and therefore impacts were considered less than significant and no mitigation was required.

Liquefaction. The Prior EIR identified areas with a high potential for liquefaction, including the Prado Basin and adjacent areas in the northwestern portion of the City. Areas in the City with a low potential for liquefaction occurred in generally north–south running bands in the western, central, and southeastern portions of the City, with an east–west running band across the northern portion of the City. The Prior EIR found impacts associated with liquefaction to be less than significant because the Approved Project was located in an area with low liquefaction potential, was underlain by soils not susceptible to liquefaction, and did not contain high groundwater levels that contribute to liquefaction. No mitigation was required.

a) (iv) Risk from landslides

The Prior EIR acknowledged the potential for earthquake-induced landslides exist on the City's hillside terrain. The Prior EIR noted the majority of the Approved Project encompasses relatively flat land, and no areas of landsliding or mass movement had been observed in the flatter portions of the site. The Prior EIR noted the presence of near vertical cliffs were found along portions of the lower-lying Bedford Wash and small landslides had been observed along the southern wall of the northern bluff. Larger landslides were observed within the southeastern and southwestern portions of the site on the steep cliffs. Other than the landslides within the steep bluffs, landslides generally did not exist within the Approved Project. Landslides observed were mostly smaller surficial failures associated with erosion of the steep bluffs. The Prior EIR concluded the presence of those landslides indicated the potential for future landsliding to occur resulting in a significant impact and Mitigation Measures 4.6.6.1C and 4.6.6.1D were prescribed, which reduced impacts to less than significant.

b) Substantial soil erosion or loss of topsoil

The Prior EIR noted all large development projects within the City are required to obtain coverage under the National Pollution Discharge Elimination System (NPDES) General Construction Permit. One of the requirements of the NPDES General Construction permit is to implement Best Management Practices (BMPs) that would control erosion and runoff generated from construction activities. The Prior EIR concluded impacts from soil erosion and loss of topsoil to be less than significant through compliance with the existing construction regulations of NPDES General Construction Permit. Since the NPDES General Construction Permit requires erosion control measures during construction activities, potential erosion impacts were determined to be less than significant and no mitigation was required.

c) Located on unstable geologic unit or soil, result in landslide, lateral spreading, subsidence, liquefaction or collapse

The Prior EIR addressed the issues of landslides, subsidence, and liquefaction as summarized in items a) iii and a) iv above. As stated above, the Prior EIR found impacts associated with these issues to be less than significant with implementation of mitigation.

d) Located on expansive soil

The Prior EIR concluded one area within the Approved Project contained soils classified as clayey fines, considered to have a medium expansion potential. The Prior EIR concluded impacts from expansive soils were considered potentially significant, and prescribed Mitigation Measure 4.6.6.2A.

e) Incapable of supporting septic tanks or alternative waste water disposal systems

The Approved Project included the construction of habitable structures that would connect to existing wastewater facilities owned and operated by the City. Therefore, septic tanks were not proposed for the Approved Project. Because the Approved Project does not include the installation of septic tanks or alternative wastewater disposal systems, the Prior EIR concluded no impacts would occur and no mitigation was required.

Impacts Associated with the Modified Project

(a) (i) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. A *Preliminary Geotechnical Evaluation* (LGC Geotechnical, July 2019) was prepared for the Modified Project and is included as Appendix E to SEIR No. 2. The evaluation confirmed the Modified Project Site is not located within an Alquist-Priolo Earthquake Fault Act Zone, and no active faults are known to cross the site. Therefore, the evaluation concluded the possibility of damage due to ground rupture is considered low. For this reason, the Modified Project will not be exposed to fault rupture hazard impacts and no mitigation is required. The Modified Project's impacts are consistent with the impacts identified in the Prior EIR and the level of impact (no impact) remains unchanged. This topic will not be evaluated further in this SEIR.

(a) (ii) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The geotechnical evaluation for the Modified Project noted there are secondary effects resulting from seismic shaking during large earthquakes on the major faults in the region, and these events may affect the Modified Project Site. These effects include ground lurching and shallow ground rupture, soil liquefaction, and dynamic settlement. The geotechnical evaluation notes these secondary effects exist throughout the Southern California region and are dependent on the proximity to the fault and onsite geology. The closest major active faults that could produce these secondary effects include the Elsinore, San Jacinto, and San Andreas Faults, among others. A detailed discussion of the secondary effects is contained in the geotechnical evaluation. The geotechnical evaluation provides recommendations regarding soil treatment, building foundations, and building construction in the same manner as Prior EIR Mitigation Measures 4.6.6A through F and 4.6.6.2A. The Modified Project's association with strong seismic ground shaking is consistent with the impacts identified in the Prior EIR and the level of impact (less than significant with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

(a) (iii) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The geotechnical evaluation noted the main seismic hazard that may affect the Modified Project Site is ground shaking from one of the active regional faults and therefore the Modified Project Site will likely experience strong seismic ground shaking during its design life. This is a significant impact and mitigation is required. To mitigate impacts to structures, the geotechnical evaluation provides recommendations regarding soil treatment, building foundations, and building construction in the same manner as Prior EIR Mitigation Measures 4.6.6.1A through 4.6.6.1F and 4.6.6.2A. The Modified Project's impacts associated with seismic related ground failure are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

Based on the lack of shallow groundwater (greater than 65 feet below ground surface) and geotechnical conditions subsequent to rough grading (compacted artificial fill overlying dense alluvium), the geotechnical evaluation concluded the potential for liquefaction to impact the Modified Project Site is considered very low. Impacts associated with liquefaction are considered less than significant, and no mitigation is required. The Modified Project's impacts regarding liquefaction are

consistent with the impacts identified in the Prior EIR and the level of impact (no impact) remains unchanged. This topic will not be evaluated further in this SEIR.

(a) (iv) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. Based on review of readily available geologic resources and field observations, the geotechnical evaluation found landslides do not exist on the Modified Project Site or in the immediate vicinity. Topographically, the geotechnical evaluation notes the site is relatively flat-lying and is therefore not susceptible to landslides, seismically-induced landslides, debris flows, rock falls, etc. The Modified Project's impacts regarding landslides is less than significant and no mitigation is required. The Modified Project's impacts regarding landslides are reduced (less than significant) in comparison to the Approved Project (less than significant with mitigation). This topic will not be evaluated further in this SEIR.

(b) Would the project result in substantial soil erosion or the loss of topsoil?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The project Applicant will be required to obtain coverage under the NPDES General Construction Permit that will result in the implementation of BMPs that would control soil erosion and stormwater runoff generated from construction activities. Through compliance with the existing construction regulations of the NPDES General Construction Permit, the Modified Project's impacts from soil erosion or the loss of topsoil would be less than significant and no mitigation is required. The Modified Project's impacts regarding soil erosion and the loss of topsoil are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

(c) Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The issues of landslides, subsidence, and liquefaction for the Modified Project Site are summarized in items (a) iii and (a) iv above. As stated previously, impacts associated with these issues are less than significant with implementation of mitigation, and consistent with the impacts identified in the Prior EIR.

Soil Import Alternative 2 involves the excavation of soil in PA 14 and hauling the soil across a temporary soil bridge across Bedford Wash on the existing concrete crossing and to the Modified Project Site (revised PA 11 and a portion of new PA 12A). PA 14 was graded previously as part of

the Approved Project and is currently a rough graded pad at the established elevation. As part of the previous grading operations, PA 14 was over-excavated approximately 5 to 7 feet below the current elevation. These soils were removed, blended, replaced, and compacted to 90%. Under Soil Import Alternative 2, soil would be removed from PA 14 to a depth approximately 13 feet below the current pad elevation.

Even though the grading of PA 14 was analyzed in the Prior EIR, the re-grading of PA 14 associated with Soil Import Alternative 2 was evaluated for potential geotechnical impacts. As specified in Appendix E (*Preliminary Geotechnical Recommendations Regarding the Updated Mass Grading Plan and Haul Route Study Phase 2b,* LGC Geotechnical, August 30, 2019), the lowering of PA 14 is geotechnically feasible with the incorporation of recommended measures. Those measures require excavation of 5 to 7 feet below the new pad elevation, extension of the previously constructed keyway, and stabilization of the ramp from PA 15 to Bedford Wash, which will serve as the haul route. All of the proposed measures are similar and consistent with the recommendations included in Prior EIR Mitigation Measures 4.6.6.1B through 4.6.6.1F and 4.6.6.2A.

With incorporation of mitigation measures, impacts would remain less than significant. The Modified Project's impacts associated with unstable soils are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

(d) Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The geotechnical investigation determined the Modified Project Site contains soils with "Very Low" to "Medium" expansion potential. Final design of soil preparation procedures and building foundations must be determined after completion of grading operations. To mitigate impacts to structures, the geotechnical evaluation provides recommendations regarding soil treatment, building foundations, and building construction in the same manner as Prior EIR Mitigation Measures 4.6.6.1A through 4.6.6.1F and 4.6.6.2A. The Modified Project's impacts associated with expansive soils are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

(e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of wastewater?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project includes connections to the City's sewer system owned and operated

by the City. Septic tanks or alternative waste water disposal systems will not be constructed as part of the Modified Project, resulting in no impact. The Modified Project's impact regarding Septic tanks or alternative waste water disposal systems is consistent with the impacts identified in the Prior EIR and the level of impact (no impact) remains unchanged. This topic will not be evaluated further in this SEIR.

Cumulative Impacts Associated with the Proposed Project

Less Than Significant Impact/No Changes or No New Information Requiring Preparation of an EIR. The Modified Project will expand the AHSP boundary and expose new areas to geologic hazards not previously analyzed in the Prior EIR. However, the Modified Project will be required to adhere to applicable State regulations, CBC standards, and the design and siting standards required by the City, as well as the geologic hazard recommendations contained in the geotechnical evaluation prepared for the Modified Project. All cumulative projects would also be required to adhere to applicable regulations related to geologic and soils hazards. Therefore, a less than significant cumulative impact would occur with implementation of the Modified Project. The level of impact (less than significant with mitigation) remains the same as the level cited in the Prior EIR. This topic will not be evaluated further in this SEIR.

Mitigation Measures Identified in Prior EIR and Applicable to Modified Project

The following mitigation measures, with minor edits to reflect updated recommendations contained in the geotechnical evaluation prepared for the Modified Project, from the Prior EIR were found to be applicable to the Modified Project:

Geology and Soils	
4.6.6.1A	Prior to the grading of areas to receive structural fill or engineered structures, these areas should be cleared of surface obstructions and unsuitable material (such as undocumented fill, colluvium, and topsoil). Vegetation and debris should be removed and properly disposed of offsite. Holes resulting from the removal of buried obstructions, which extend below proposed removal bottoms, should be replaced with suitable compacted fill material. ~~Prior to the initiation of any on-site construction, the project contractor shall remove all loose, compressible alluvial and fill materials from areas to receive engineered compact fill. Actual depths of removal shall be verified during future site specific preliminary soils investigations and ultimately during the grading operation by observation and in-place density testing.~~

4.6.6.1B	**Onsite Soils/Unsuitable.** All unsuitable and potentially compressible materials not removed by design cuts shall be excavated to competent materials and replaced with compacted fill soils. This includes all existing undocumented artificial fill, residual soil, and upper portions of the previously placed compacted fill within PA 11 and alluvial deposits. Specific procedures by soil type are summarized below. *Previously Placed Artificial Fill:* The previously placed compacted fill within PA 11 are considered suitable to support proposed structures and/or additional fill placement. The upper 1-foot of the previously placed fill soils shall be removed and replaced with compacted fill soils in order to remove any weathered or desiccated materials. *Alluvial Deposits:* Alluvial deposits are generally located within the Modified Project Site. The upper approximately 5 feet of the alluvial deposits is loose, weathered, and/or desiccated and shall be removed and replaced with compacted artificial fill soils. Removal depths are estimated to range between approximately 1 to 5 feet below existing grade. Localized areas of deeper removals should be anticipated during grading. Removal bottoms should be extended laterally in order to support a 1:1 (horizontal to vertical) projection away from proposed structures or improvements. The actual depths and lateral extents of removals will be determined by the geotechnical consultant during grading based on the actual subsurface conditions encountered. Several methods shall be utilized in determining the suitability of the material observed in the removal bottom excavations. Observation of material, proof rolling, probing, and occasional field density testing of the removal bottoms shall be performed by a field technician and/or field geologist to verify removal bottom suitability. When field density test data is utilized for the approval of a removal bottom, an in-place relative compaction of 85 percent or greater and/or a degree of saturation of 85 percent or greater will be considered suitable. **Onsite Soils/Over-Excavation.** In order to provide a uniform fill blanket beneath proposed structures, design cut and cut/fill transition pads shall be over-excavated a minimum of 3 feet below ultimate finish pad grade based on the future rough grading design. A maximum 3:1 differential fill thickness underneath individual lots shall be maintained in order to reduce the potential for future differential settlement. Over-excavation shall extend laterally a minimum of 5 feet beyond proposed building footprints. Streets in design cut areas shall be over-excavated a minimum of 2 feet below design

	subgrade elevations. In addition, retaining wall footings located on cut or a cut/fill transition should be over-excavated a minimum of 2 feet below and 2 feet beyond the edges of the proposed footings. Utility excavations may be completed utilizing typical heavy machinery. The native soils at the site are generally uncemented alluvial soils (Class "C" per Cal OSHA) and are anticipated to be unstable when excavated vertically. At the owner's discretion the streets could be over-excavated, such that utility trenches will then be excavated through compacted fill soils. If desired, it is recommended that the street over-excavation extend approximately 2-foot below the lowest utility. Over-excavations/undercuts must be confirmed and mapped by the geotechnical consultant prior to subsequent fill placement. The actual depth and lateral extents of over-excavation should be determined by the geotechnical consultant during grading based on the actual subsurface conditions encountered. Estimated removals in the previously graded portin of PA 11 may extend deeper than the recommended over-excavation in order to remove unsuitable materials. **Removal Bottoms and Subgrade Preparation.** Removal bottoms, over-excavation bottoms, and areas to receive compacted fill shall be scarified to a minimum depth of 6 to 8 inches, brought to a near-optimum moisture condition (generally within optimum and 2 percent above optimum moisture content) and re-compacted per project requirements. Removal bottoms, over-excavation/undercut bottoms, and areas to receive fill shall be observed and accepted by the geotechnical consultant prior to fill placement. **Temporary Excavations.** Temporary excavations shall be performed in accordance with project plans, specifications, and applicable Occupational Safety and Health Administration (OSHA) requirements. Excavations shall be laid back or shored in accordance with OSHA requirements before personnel or equipment are allowed to enter. The majority of site alluvial soils are anticipated to be OSHA Type "C" soils. Soil conditions shall be regularly evaluated during construction to verify conditions are as anticipated. The contractor shall be responsible for providing the "competent person" required by OSHA standards to evaluate the soil conditions. Close coordination with the geotechnical consultant shall be maintained to facilitate construction while providing safe excavations. Excavation safety is the sole responsibility of the contractor. Vehicular traffic, stockpiles, and equipment storage shall be set back from the perimeter of excavations a minimum distance equivalent to a 1:1 projection from the bottom of the excavation or 5 feet, whichever is greater. Once an excavation has been initiated, it shall

	be backfilled as soon as practical. Prolonged exposure of temporary excavations may result in some localized instability. Excavations shall be planned so that they are not initiated without sufficient time to shore/fill them prior to weekends, holidays, or forecasted rain. ~~All on-site soils shall provide adequate quality fill material provided they are free from organic matter and other deleterious materials. Rock or similar irreducible material with a maximum dimension greater than six inches shall not be buried or placed in fills. However, oversized materials, with a maximum dimension greater than 8 inches, may be placed in fills or buried on site in accordance with recommendations proved by the geotechnical engineer during grading. Oversized material may be stockpiled for landscaping purposes or placed in a rock disposal area as approved by the project owner, developer, geotechnical engineer, and City. Import fill shall be inorganic, non-expansive granular soils free from rocks or lumps greater than six inches in maximum dimension. Sources for import fill shall be approved by the project geotechnical engineer prior to their use. Fill shall be spread in maximum eight inch uniform loose lifts; each lift brought to near optimum moisture content, and compacted to a relative compaction of at least 90 percent in accordance with ASTM D 1557.~~
4.6.6.1C	Stabilization fills shall be constructed on proposed cut slopes over 5 feet in height in accordance with the detail provided in Appendix D. Keyway widths shall be a minimum of 15 feet wide. Keyways shall be a minimum of 2 feet deep, determined from the lowest toe-of-slope elevation, and tilted back towards the heel a minimum 2 percent or 1-foot (whichever is greater). Stabilization fill backcuts shall be excavated so that at least a minimum 15-foot fill width is maintained for the entire height of the stability fill slope. In general, backcuts shall be excavated at a maximum 1.5:1 (horizontal to vertical) inclination. Properly outletted back drains shall be constructed along stabilization fill backcuts in accordance with SEIR Appendix E in the Geotechnical Evaluation, General Earthwork and Grading Specifications for Rough Grading. Flatter backcut inclinations may be required based on observed conditions during grading. The backcuts should not be initiated prior to forecasted rain or be left open for extended periods of time. Backcuts and keyway excavations must be geologically mapped by the geotechnical consultant during excavation to confirm the anticipated conditions. If adverse conditions are exposed, additional analysis and/or remediation measures may be required. The grading contractor must trim the backcuts with a slope board to remove loose material to

	allow for confirmational mapping. Updated and/or revised geotechnical recommendations may be required based on observed conditions. ~~Cut and fill slopes shall be planned at gradients no steeper than two horizontal to one vertical. Additional information regarding any proposed cut slopes and the existing natural slope stability should be addressed within the site specific preliminary soils investigations when grading/development plans are made available for the specific tracts/development areas.~~
4.6.6.1D	Design fill slopes are anticipated to be both grossly and surficially stable as designed provided they are constructed in accordance with SEIR Appendix E in the Geotechnical Evaluation, General Earthwork and Grading Specifications for Rough Grading and properly maintained subsequent to construction. Fill slopes shall be constructed with a maximum slope ratio of 2:1 (horizontal to vertical). Slope faces shall also be compacted to project recommendations. To improve surficial stability, vegetation specified by the landscape architect shall be established on the slope face as soon as it is practical. ~~Where fills are to be placed against existing slopes steeper than five horizontal to one vertical, the fill shall be properly keyed and benched into competent native materials. The key, constructed across the toe of the slope, shall be a minimum of 12 to 15 feet wide, a minimum of two feet deep at the toe, and sloped back at 2 percent. Benches shall be constructed at approximately two to four feet vertical intervals.~~
4.6.6.1E	Graded slopes shall be planted with groundcover vegetation as soon as practical to protect against erosion by reducing runoff velocity. Deep-rooted vegetation that requires little water and is able to survive local climate conditions shall also be established to protect against surficial slumping. Under no circumstances shall slopes be allowed to be bare of vegetation. Landscape vegetation must not be "trimmed" to root structures leaving no protection of the slopes. Irrigation levels shall be kept to the minimum level necessary to establish healthy plant growth. Slopes must not be overwatered. If automatic sprinklers are used, they must be adjusted during periods of rainfall. A landscape professional must be consulted for landscape recommendations. A program for the elimination of burrowing animals in both native and graded slope areas must be established to protect slope stability by reducing the potential for surface water to penetrate into the slope face. Continuous erosion control, rodent control, and maintenance are essential to the long-term stability of all slopes. Trenches excavated on a slope face for

	utility or irrigation lines and/or for any purpose must be properly backfilled and compacted to project recommendations to the slope face. Observation/testing and acceptance by the geotechnical consultant during trench backfill are recommended. V-ditches shall be inspected and cleared of loose soil and/or debris on a routine basis, especially prior to and during the rainy season. ~~Slopes at the project site shall be planted with a deep-rooted groundcover as soon as possible after completion. The use of succulent ground covers such as ice plant or sedum is not recommended. If watering is necessary to sustain plant growth on slopes, then the watering operation shall be monitored to ensure proper operation of the irrigation system and to prevent overwatering.~~
4.6.6.1F	Prior to the initiation of any on-site construction, evidence shall be submitted to the City for review and approval that on-site development has incorporated the design and siting recommendations detailed in the site-specific Geotechnical Evaluation~~investigation~~.
4.6.6.2A	On-site soils and any imported soils for individual tracts/development areas shall be evaluated for their expansion potential prior to grading and ultimately following completion of the grading operation. The evaluation shall determine and identify specialized construction procedures to specifically resist expansive soil activity in accordance with the CBC and/or applicable local ordinances.

3.4.7 Greenhouse Gas Emissions

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☐	☒
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

Summary of Impacts Identified in Prior EIR

a) Generate significant greenhouse gas emissions

The Prior EIR calculated greenhouse gas (GHG) emissions for the Approved Project, and prescribed Mitigation Measures 4.3.6.4A, 4.3.6.4B, 4.7.6.1A, and 4.7.6.1B to reduce GHG emissions from the Approved Project. The GHG methodology employed at the time was to reduce business as usual (BAU) emissions by 25 percent. With implementation of mitigation, the Prior EIR found GHG emissions would be reduced by 31.5 percent less than the BAU scenario. The Prior EIR concluded the level of impact would be less than significant with mitigation.

b) Consistency with greenhouse gas plan, policy, regulation

Analysis of GHG emissions in the original environmental approval for the Approved Project noted the City had not yet adopted its Climate Action Plan (CAP), which was implemented in 2012. Nonetheless, the Prior EIR conducted a GHG consistency analysis against the City's draft CAP. As discussed above, the Prior EIR noted the City's CAP required a reduction of GHG emissions by 25 percent compared to the BAU scenario. With implementation of mitigation, the Approved Project would have a reduction of 31.5 percent below BAU. The Approved Project was determined to be consistent with the applicable CAP resulting in a less than significant impact with implementation of Prior EIR Mitigation Measures 4.3.6.4A, 4.3.6.4B, 4.7.6.1A, and 4.7.6.1B.

Impacts Associated with the Modified Project

(a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project would expand the AHSP commercial area by 11.64 acres, resulting in 143,730 sf of commercial building area that includes a 135-room hotel added to the Approved Project, increasing construction and operational GHG emissions over and above those analyzed in the Prior EIR. An *Air Quality and Greenhouse Gas Memorandum* (Urban Crossroads, November 26, 2019) contained in Appendix B was prepared to assess GHG impacts from the Modified Project.

As detailed in the *Air Quality and Greenhouse Gas Memorandum*, the Modified Project would result in an incremental increase of GHG emissions of 3,325.07 $MTCO_2e$ per year, resulting in total emissions of 8,537.89 $MTCO_2e$ per year for the entire commercial center. The City has adopted a Climate Action Plan (CAP) that specifies compliance with the CAP as the CEQA threshold of significance. This threshold was applied to the Approved Project and also applies to the Modified Project. The CAP includes design features that reduce GHG emissions. Each design feature is assigned a numerical value. In order to comply with the CAP, the Modified Project must incorporate enough design features to reach 100 points, which are verified and implemented during final design. Compliance with the CAP is consistent with the analysis included in the Prior EIR and no significant impacts would occur. This topic will not be evaluated further in this SEIR.

Cumulative Impacts Associated with the Proposed Project

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project would generate GHG emissions that would contribute to cumulative emissions in California. As indicated above and in the same manner as for the Approved Project, the

Modified Project's GHG impacts would be reduced to less than significant with implementation of Mitigation Measures 4.3.6.4A, 4.3.6.4B, 4.7.6.1A, and 4.7.6.1B. The Modified Project is consistent with State and City GHG emissions reduction requirements. With the implementation of mitigation and GHG reduction strategies, the Modified Project's cumulative GHG emissions would not be considered significant. The Modified Project's cumulative impacts are consistent with the cumulative impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

Mitigation Measures Identified in Prior EIR and Applicable to Modified Project

The following mitigation measures from the Prior EIR were found to be applicable to the Modified Project:

Greenhouse Gas Emissions	
4.3.6.4A	Prior to issuance of each building permit associated with the Specific Plan, building and site plan designs shall ensure that the project's energy efficiencies surpass applicable 2008 California Title 24, Part 6 Energy Efficiency Standards by a minimum of 20 percent. Verification of increased energy efficiencies shall be documented in Title 24 Compliance Reports provided by the Applicant, and reviewed and approved by the City. Any combination of the following design features may be used to fulfill this requirement provided that the total increase in energy efficiency meets or exceeds 20 percent: • Exceed 2008 California Title 24 Energy Efficiency performance standards for water heating and space heating and cooling. • Increase in insulation such that heat transfer and thermal bridging is minimized. • Limit air leakage through the structure or within the heating and cooling distribution system to minimize energy consumption. • Incorporate dual-paned or other energy efficient windows. • Incorporate energy efficient space heating and cooling equipment. • Install interior and exterior energy efficient lighting which exceeds the 2008 California Title 24 Energy Efficiency performance standards including but not limited to automatic devices to turn off lights when they are not needed. • To the extent that they are compatible with landscaping guidelines established by the City, include shade producing trees, particularly those that shade paved surfaces such as streets and parking lots and buildings, within the project site. • Use light and off-white colors in the paint and surface color palette for project buildings to reflect heat away. • All buildings shall be designed to accommodate renewable energy sources, such as photovoltaic solar electricity systems, appropriate to their architectural design.
4.3.6.4B	Prior to issuance of each building permit associated with the Specific Plan, the following design features shall be implemented to reduce energy demand associated with potable water conveyance: • Landscaping palette emphasizing drought-tolerant plants; • Use of water-efficient irrigation techniques; and • U.S. EPA Certified WaterSense labeled or equivalent faucets, high-efficiency toilets (HETs), and water-conserving shower heads.

4.7.6.1A	Prior to the issuance of each grading permit associated with the Specific Plan, the project developer shall develop and implement a construction waste management plan that would require the recycling and/or salvaging of non-hazardous construction and demolition waste.
4.7.6.1B	Prior to the issuance of each building permit associated with the Specific Plan, the project developer shall facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills by providing easily accessible areas that serve each building and are dedicated to the collection and storage of paper, cardboard, glass, plastics, and metals.

This Page Intentionally Left Blank

3.4.8 Hazards and Hazardous Materials

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials	☐	☐	☐	☒
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 67962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the Specific Plan area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the Specific Plan area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
h) Expose people or structures to a significant risk of loss, injury of death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

Summary of Impacts Identified in Prior EIR

a) Hazard from routine transport, use, or disposal of hazardous materials
b) Release of hazardous materials from reasonably foreseeable upset and accident conditions

The Prior EIR noted development of the Approved Project would introduce potentially hazardous materials (e.g., petroleum products, pesticides, fertilizer, and other household hazardous products such as paint products, solvents, and cleaning products) to the AHSP site. In addition, the Prior EIR noted hazardous materials would be present during construction of the Approved Project, including typical fluids, solvents, cleansers used to operate/drive/maintain equipment and vehicles.

The Prior EIR noted the potential for exposure of hazardous materials into the environment from accidental releases of typical products stored and sold in conjunction with retail sales within the commercial area of the Approved Project, as well as the presence of household hazardous materials purchased by residents in the residential areas of the Approved Project. Hazardous material spills associated with household hazardous products sold in retail stores or stored in residential areas within the Approved Project was determined to be small and easily contained and less than significant and no mitigation was required.

The Prior EIR noted appropriate documentation for all hazardous waste transported in connection with project activities would have be required to comply with existing hazardous materials handling regulations. The United States Department of Transportation Office of Hazardous Materials Safety established strict regulations for the safe transportation of hazardous materials. Transportation of all hazardous materials would have complied with all applicable regulations resulting in a less than significant impact and no mitigation was required.

The Prior EIR also noted the California Hazardous Materials Management Act required businesses handling or storing certain amounts of hazardous materials prepare a Hazardous Materials Business Emergency Plan (HMBEP), which would include an inventory of hazardous materials stored on site, an emergency response plan, and an employee training program. The handling of hazardous materials in accordance with the HMBEP as required by applicable local, State, and Federal standards, ordinances, and regulations would have ensured that impacts associated with environmental and health hazards related to an accidental release of hazardous materials on the Specific Plan area were less than significant and no mitigation was required.

c) Hazardous emissions or materials within one-quarter mile of an existing or proposed school

The Prior EIR noted there were no schools within 0.25 mile of the Approved Project. In addition, the Prior EIR stated students residing in the AHSP residential community would have attended existing schools within the Corona-Norco Unified School District. Therefore, no new school facilities were proposed to be built within 0.25 mile of a project that would emit hazardous emissions. In addition, the handling of hazardous materials or emission of hazardous substances in accordance with the HMBEP as required by applicable local, State, and Federal standards, ordinances, and regulations would have ensured that impacts associated with environmental and health hazards related to an accidental release of hazardous materials or emissions of hazardous substance near existing or proposed schools were less than significant and no mitigation was required.

d) Site found on list of hazardous materials sites

The Prior EIR noted the Approved Project site was not listed in any regulatory database for hazardous materials. Based on the information provided by the public, regulatory and governmental agencies, and information obtained during the records search and literature review, there did not appear to be any sites within a mile of the Approved Project that would have resulted in an adverse impact on the Approved Project.

The Prior EIR noted the existence of structures/infrastructure scattered throughout the Approved Project. All of these structures and infrastructure features were previously used for agricultural purposes. None of the existing structures/features exhibited a hazardous condition.

Due to the past agricultural use of the Approved Project and surrounding area, an assessment was conducted to address residual organochlorine pesticides (OCPs), a smudge pot storage area, a 10,000-gallon aboveground smudge oil storage tank, and a 10-foot by 10-foot storage shed. The assessment concluded there were no hazardous conditions at these locations other than very high levels of pesticides found in the soil beneath the wood floor of the shed, which resulted in a significant impact requiring mitigation.

The Prior EIR noted the Approved Project was not listed as a hazardous materials release area, was not included on the Cortese List, and no on-site violations were noted in the regulatory database. The Prior EIR found it was highly unlikely that hazardous materials would have been uncovered during soil-disturbing activities on site, however there was a chance that unknown wastes or suspect materials may have been encountered during soil-disturbing activities resulting in a significant impact requiring mitigation.

e) Public safety hazards within ALUP or within two miles of public airport
f) Public safety hazards within vicinity of private airport

The Prior EIR noted the Approved Project was noted located within an Airport Land Use Plan, within two miles of a public use airport, or in the vicinity of a private airport. The Corona Municipal Airport (CMA) located approximately 6.5 miles northwest of the Approved Project was noted as the closes airport. Due to the distance of the Specific Plan area from the CMA, the Prior EIR concluded potential development of the Approved Project would not have resulted in a safety hazard for people residing or working within the AHSP area. Therefore, no impacts associated with this issue were found to occur.

g) Conflict with an Emergency Response Plan

The Prior EIR noted the Approved Project was accounted for in the City's General Plan as evidenced by designation of the Approved Project as "possible future urban use." The Prior EIR noted the Approved Project would have been designed, constructed, and maintained in accordance with applicable standards associated with vehicular access, which would have ensured that access would have been properly provided for adequate emergency access and evacuation. Construction activities that could have temporarily restricted vehicular traffic would have been required to implement a Traffic Management Plan as part of the building permit that would have required adequate and appropriate measures to facilitate the passage of persons and vehicles through/around any required road closures. The Prior EIR concluded compliance with existing regulations for emergency access and evacuation would have ensured that impacts related to this issue were less than significant and no mitigation was required.

h) Safety hazard from wildland fires

The Prior EIR noted the majority of the Approved Project was located in a "Non-wildland/non-urban" zone as identified by the California Department of Forestry and Fire Protection (CDFFP). The southeastern portion of the Approved Project above Bedford Canyon Wash was located in a "Very High Fire Hazard" Severity Zone. Neighboring land to the east and south of the Approved Project were was also identified as a "Very High Fire Hazard" Severity Zone as well as a State Responsibility Area (SRA) designated "Very High Fire Hazard Severity Zone" by the CDFFP. The Prior EIR noted development of the Approved Project would have been required to comply with all applicable fire code requirements and associated fire prevention measures to reduce the risk of wildland fires. In addition, these areas were subject to the requirements of the City of Corona Fire Department construction design guidelines and fuel modification standards.

In addition, the Prior EIR noted the Approved Project would comply with the County of Riverside Fire Authority Design Guidelines and fuel modification standards resulting in a 200-foot fuel modification zone along the easterly edge of the Specific Plan area. The 200-foot defensible space zone would have served to reduce the amount of fuel surrounding buildings and structures within the Approved Project. To ensure that impacts associated with wildfires would have been reduced to less than significant, Mitigation Measure 4.8.6.2A was identified in the Prior EIR.

Impacts Associated with the Modified Project

(a) Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?

(b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project will expand the AHSP boundary and result in the development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project. All fuels, solvents and other materials used during construction would be required to comply with applicable standards and regulations related to hazardous materials and hazardous waste as specified in the Prior EIR. The additional commercial land uses would result in an incremental increase in the potential for accidental releases of hazardous materials during routine transportation and disposal of hazardous materials. All materials used during construction and operation would be required to comply with applicable standards and regulations related to hazardous waste as specified in the Prior EIR, and no new or substantially greater impacts would occur. The Modified Project's impacts associated with hazards from routine transport, use, or disposal of hazardous materials and from the release of hazardous materials from upset and accident conditions are consistent with the impacts identified in the

Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

(c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project will expand the AHSP boundary to the east, resulting in development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project. As noted in the Prior EIR, there were no schools within 0.25 mile of the Approved Project. No schools have been built within 0.25 mile of the Modified Project Site since approval of the Approved Project. Therefore, no new or substantially greater impacts would occur with implementation of the Modified Project as compared to the Prior EIR. The Modified Project's impacts regarding are consistent with the impacts identified in the Prior EIR and the level of impact (no impact) remains unchanged. This topic will not be evaluated further in this SEIR.

(d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 67962.5 and, as a result, would it create a significant hazard to the public or the environment?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project will expand the AHSP boundary to the east, resulting in development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project. Separate Phase I Environmental Site Assessments (EBI Consulting, June 2019) were prepared for the existing property in PA 11 and the Modified Project Site, and are included as Appendix F to SEIR No. 2. Based on research conducted as part of the assessments, existing PA 11 and the Modified Project Site are not on the Cortese/HIST Cortese databases. In addition, there are not sites on the Cortese List located within 0.5 mile of the two properties. The Modified Project's impacts regarding contaminated sites are consistent with the impacts identified in the Prior EIR and the level of impact (no impact) remains unchanged. This topic will not be evaluated further in this SEIR.

(e) For a project located within an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the Specific Plan area?

(f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the Specific Plan area?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project will expand the AHSP boundary to the east, resulting in development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project.

The Prior EIR noted the Approved Project was noted located within an Airport Land Use Plan, within two miles of a public use airport, or in the vicinity of a private airport. No airports have been built near the AHSP since the Approved Project was approved. Due to the 6.5 mile distance between the Modified Project Site and the closest airport, Corona Municipal Airport, development of the Modified Project would not result in a safety hazard for people residing or working within the AHSP area. No new or substantially greater impacts would occur with implementation of the Modified Project. The Modified Project's impacts regarding public and private airports are consistent with the impacts identified in the Prior EIR and the level of impact (no impact) remains unchanged. This topic will not be evaluated further in this SEIR.

(g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project will expand the AHSP boundary and result in the development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project. The Modified Project would be designed, constructed, and maintained in accordance with applicable standards associated with vehicular access, which would ensure that access would have been properly provided for adequate emergency access and evacuation. Construction activities that could temporarily restrict vehicular traffic would be required to implement a Traffic Management Plan as part of building permit approval to ensure adequate access is maintained. Compliance with existing regulations for emergency access and evacuation would ensure impacts related to emergency access and response is less than significant and no mitigation is required. The Modified Project's impacts associated this issue are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

(h) Expose people or structures to a significant risk of loss, injury of death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project will expand the AHSP boundary and result in the development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project. The Modified Project Site is located adjacent to a previously graded pad within existing PA 11 to the west, I-15 to the east, and Cajalco Road to the north. Bedford Canyon Wash was recently widened, stabilized, and restored and is located to the south of the Modified Project Site. High fire risk areas as indicated by the CDFFP are located in the vicinity to the southeast of the Modified Project Site on the slopes of the Santa Ana Mountains in the US National Forest. Implementation of the Approved Project requires preparation and implementation of project-specific Wildland Fire Plan/Fuel Modification Plan, which would mitigate potential threat of wildfires. Therefore, no new or substantially greater impacts would

occur with implementation of the Modified Project as compared to those identified in the Prior. The Modified Project's impact regarding wildfires is consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

Cumulative Impacts Associated with the Proposed Project

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project will expand the AHSP boundary and result in the development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project. As identified above, project-specific impacts form the Modified Project related to hazards and hazardous materials would not change relative to those identified in the Prior EIR.

While project-specific hazardous material impacts resulting from individual future development projects will be mitigated via application of applicable regulations or addressed separately in future CEQA documents, anticipated future development will contribute, through increases in population and the number of outlets that transport or dispose of hazardous materials, to a cumulative increase in risk for hazardous material incidents. Although each project has unique hazardous materials considerations, future cumulative projects would comply with the local, State, and Federal regulations and requirements as these are required for all development projects. As a result, cumulative impacts associated with hazardous materials would be less than significant.

Cumulative aircraft hazard impacts consist of future development within the boundaries of the Airport Land Use Plan (ALUP) accident potential zones. The risk to each future project is based on the specific accident potential zone. The risks associated with development in these accident potential zones can only be reduced through conformance with land use guidelines and policies identified by the ALUP. However, because the surrounding cities as well as the County of Riverside have implemented comprehensive land use plans that incorporate applicable ALUP recommendations, it is anticipated cumulative development within the accident potential zones would in a less than significant cumulative impact associated with aircraft accident hazards.

Similar to the conclusions for the Approved Project contained in the Prior EIR, the Modified Project would be required to comply with local, State, and Federal regulations and requirements related to hazardous materials. With adherence to these measures, the proposed project's impacts would not contribute to cumulatively significant impact. The Modified Project's level of impact for cumulative hazards and hazardous materials impacts is consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

Mitigation Measures Identified in Prior EIR and Applicable to Modified Project

The following mitigation measures, with minor edits to reflect updated recommendations contained in the geotechnical evaluation prepared for the Modified Project, from the Prior EIR were found to be applicable to the Modified Project:

Hazards and Hazardous Materials	
~~4.8.6.1B~~	~~If soil from any location on the project site is to be removed or transported off site, the soil export must have a DDT level of less than 1 part per million (ppm). Soil to be exported off site shall be tested, and verification of the soil results shall be submitted to the City for review prior to the issuance of soil export operations.~~
4.8.6.1C	If unknown wastes or suspected hazardous materials are discovered during any construction activities on the project site, the following shall occur: • Immediately stop work in the vicinity of the suspected contaminant, removing workers and the public from the area; • Notify the City of Corona Fire Department and the Riverside County Department of Environmental Health; • Notify the project engineer of the implementing agency (the City of Corona) and secure the area containing the unknown wastes or suspect materials as directed by the project engineer; and • Notify the project engineer of the implementing agency (the City of Corona) and secure the area containing the unknown wastes or suspect materials as directed by the project engineer; and • Notify the implementing agency's Hazardous Waste/Materials Coordinator.
4.8.6.1E	Prior to the issuance of demolition permits for any planning areas containing structures, any remaining structures on site shall be visually inspected by the project engineer of the implementing agency (City of Corona) prior to demolition activities. If hazardous materials are encountered, the materials shall be tested and properly disposed of in accordance with state and federal regulatory requirements. Any stained soils or surfaces underneath the removed materials shall be sampled. Results of the sampling would indicate the appropriate level of remediation efforts that may be required. Testing and remediation of unknown wastes or suspect materials shall be conducted under the

	purview of the applicable agency (i.e., DTSC, Santa Ana RWQCB, and/or City). Remediation shall be conducted to the standards established by the Lead Agency (i.e., DTSC, Santa Ana RWQCB, and/or City). All contaminated soil locations identified shall be remediated below hazardous levels established by Title 22 of the California Code of Regulations and to the satisfaction of the applicable Lead Agency.
4.8.6.1F	Prior to the issuance of grading permits for each planning area, all miscellaneous debris (e.g., wood and concrete) shall be removed and disposed of at an approved landfill facility prior to construction activities under the purview of the appropriate agency (i.e., DTSC, Santa Ana RWQCB, and/or City). Once removed, a visual inspection of the areas beneath the removed materials shall be performed by the construction contractor as specified by the City of Corona. Any stained soils observed underneath the removed materials shall be sampled. Results of the sampling, if necessary, would indicate the level of remediation efforts that may be required. Remediation shall be conducted to the standards established by the Lead Agency (i.e., DTSC, Santa Ana RWQCB, and/or City). All contaminated soil locations identified shall be remediated below hazardous levels established by Title 22 of the California Code of Regulations and to the satisfaction of the applicable Lead Agency.
4.8.6.2A	Prior to the issuance of building permits for each planning area, the project proponent shall prepare, submit, and receive approval from the City and Riverside County Fire Department, a project-specific Wildland Fire Plan/Fuel Modification Plan. The Wildland Fire Plan/Fuel Modification Plan shall include but shall not be limited to the following: • Goals, policies, and actions related to fire funding and fire rehabilitation; • Fire protection and evacuation plan; • Vegetative fuels management plan; • Public education program; and • Defensible space requirements which meet and/or exceed the City of Corona Fire Department and Riverside County Fire Department Fuel Modification Requirements.

This Page Intentionally Left Blank

3.4.9 Hydrology and Water Quality

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☒
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off site?	☐	☐	☐	☒

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off site?	☐	☐	☐	☒
e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
f) Otherwise substantially degrade water quality?	☐	☐	☐	☒
g) Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Expose people or structures to inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

Summary of Impacts Identified in Prior EIR

a) Violate water quality standards and waste discharge requirements

f) Otherwise degrade water quality

The Prior EIR noted short-term storm water pollutant discharges from each individual site within the Approved Project would be prevented through compliance with the applicable construction oriented best management practices (BMPs) implemented by the NPDES permitting process. Coverage with applicable NPDES permits would prevent sedimentation and soil erosion through implementation of an SWPPP and periodic inspections by RWQCB staff. During the construction period, the development associated with the Approved Project would utilize a series of BMPs to reduce erosion and sedimentation. The Prior EIR prescribed Mitigation Measures 4.9.6.1A through 4.9.6.1C to ensure future construction within the Approved Project obtains coverage under the NPDES General Construction permit, resulting in a less than significant impact with mitigation.

To comply with operational water quality standards, the Approved Project would be required to prepare a site-specific Water Quality Management Plan (WQMP) to identify low-impact development storm water retention strategies and appropriate controls to mitigate potential violations of water quality standards or waste discharge requirements. The Prior EIR prescribed Mitigation Measure 4.9.6.2A requiring approval of a final WQMDP and concluded the Approved Project's operational water quality

impacts would less than significant with adherence to existing regulatory requirements and implementation of mitigation.

b) Deplete groundwater supplies

Groundwater levels can be affected by increased impervious surfaces reducing infiltration into underlying groundwater basins. Groundwater levels can also be affected by increased water demand that is supplied by groundwater sources.

The Prior EIR noted the City's primary water source is groundwater from the Temescal, Bedford, and Coldwater groundwater sub-basins. The secondary source is water imported by the Metropolitan Water District of Southern California (MWDSC) from the Colorado River and the State Water Project (SWP). The MWDSC provides wholesale water to Western Municipal Water District (WMWD) who in turn sells water to the City.

The Prior EIR noted the City's Groundwater Management Plan (GWMP) developed strategies for more sustainable management and use of groundwater resources to meet future water demands in recognition of decreasing groundwater levels in regional groundwater basins. The GWMP recommended these strategies be implemented through 2020 to reduce demands for imported water and to meet projected demands. The City shares one or more of the three groundwater sub-basins with the City of Norco, Home Gardens County Water District, Lee Lake Water District (LLWD), and Elsinore Valley Municipal Water District (EVMWD). LLWD participated in the GWMP and proposed a groundwater recharge project with recycled water in the Bedford Sub-basin.

The Prior EIR acknowledged the serious water supply issues facing California and noted Governor Brown's 2015 declared State of Emergency due to drought conditions. The Prior EIR noted the City would rely solely on groundwater supplies to meet existing and future water demands in the event of a prolonged drought resulted in curtailed water supply deliveries from MWDSC. The Prior EIR analyzed the Approved Project's affect on groundwater supplies should the City be forced to rely solely on groundwater to supply City water demand during a prolonged drought.

The Prior EIR noted the City's 2010 Urban Water Management Plan (UWMP) identified the availability of sufficient water supplies to meet future water demand in the City's service area including the additional water demand from the Approved Project in year 2030 under normal, single-dry and multiple-dry water years. The Prior EIR found the City had sufficient groundwater rights to extract the necessary water to serve the Approved Project, and noted additional groundwater supplies could be utilized to meet demand if necessary. The Prior EIR prescribed Mitigation Measures 4.9.6.3A and 4.9.6.3B requiring a project level water conservation plan and water conservation educational program, reducing impacts from the Approved Project on groundwater supplies to a less than significant level.

c) Alter existing drainage pattern, stream or river, resulting in erosion or siltation
d) Alter existing drainage pattern, stream or river, resulting in increased runoff
e) Create runoff exceeding capacity of storm water drainage system or substantially increase polluted runoff

The Prior EIR noted stormwater flows from the Approved Project would be adequately detained and handled by a system of drainage facilities and detention basins to mitigate increased peak flows and mitigate how fast the increased volume would be released into the natural streambed. The Prior EIR noted the system included underground drainage facilities below streets construction within the AHSP, an open channel along the north side of the AHSP, a regional detention/water quality basin located in PA 12 and a local detention/water quality basin located in PA 14. The basins would detain storm water flows before outletting into Bedford Canyon Wash. The Prior EIR noted the basins would be designed to treat water quality pollutants prior to discharging waters into Bedford Canyon Wash.

The Prior EIR also assessed the impacts as well as the benefits from the planned widening, stabilization and restoration of Bedford Canyon Wash included as part of the Approved Project. The improvement project was developed to maintain and restore the natural channel in such a manner to minimize erosion to the existing bluff and perpetuating the sediment transport capabilities of the natural wash. The Prior EIR noted each of the three design options would safely convey 100-year storm events and would achieve the following general hydraulic objectives:

- Accommodate the 100-year storm event for Bedford Canyon Wash in a burned and bulked condition with sufficient additional freeboard above design flow elevations.
- Protect the existing bluff on the east side of Bedford Canyon Wash from erosive velocities by either placing high velocity storm flows in a bypass channel or protecting the bluff with buried riprap.
- Lower the elevation of storm flows in either the bypass channel or Bedford Canyon Wash to an elevation below proposed Street "B" and adjoining residential building pads.
- Discharge storm flows at the downstream (northern) property line in a manner consistent with existing flows, including peak volumes, velocities, and debris conveyance.

The Prior EIR noted design of the Approved Project included storm water and water quality facilities and prescribed Mitigation Measure 4.9.6.2A requiring approval of a final that would result in less than significant impacts associated with altering existing drainage patterns, producing erosion and siltation, and exceeding the capacity of the storm water drainage system.

g) Place housing in 100-year flood hazard area

h) Impede or redirect flood flows by placing structures in 100-year flood hazard area

The Prior EIR noted the Approved Project would adhere to the Federal Emergency Management Agency (FEMA) Conditional Letter of Map Revision (CLOMR) and Letter of Map Revision (LOMR) certification processes to ensure the project would not result in flooding. The Prior EIR noted all drainage facilities and flood control measures would be designed in accordance with the requirements of the City and Riverside County Flood Control and Water Conservation District. The Prior EIR identified Mitigation Measure 4.9.6.4A to ensure drainage facilities would be sufficiently located, sized, and constructed to protect the Approved Project from 100-year flood hazards.

i) Expose people or structures to loss, injury or death from flooding including levee or dam failure

The Prior EIR concluded development of the Approved Project would not expose people or structures to flooding as a result of levee or dam failure.

j) Inundation by seiche, tsunami, or mudflow?

The Prior EIR concluded development of the Approved Project would not inundate people or structures by seiche, levee or mudflow.

Impacts Associated with the Modified Project

(a) Violate any water quality standards or waste discharge requirements?

(f) Otherwise substantially degrade water quality?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. As identified in the Prior EIR, short-term storm water pollutant discharges from each individual site within the AHSP would be prevented through compliance with applicable NPDES permitting processes. The Modified Project would be required install BMPs to prevent sedimentation and soil erosion through implementation of an SWPPP and periodic inspections by RWQCB staff. During the construction period, development of the Modified Project's BMPs would reduce erosion and sedimentation consistent with the analysis contained in the Prior EIR. To ensure that future development within the AHSP area obtains coverage under the NPDES General Construction permit, the Prior EIR included Mitigation Measures 4.9.6.1A through 4.9.6.1C. These measures are applicable to the Modified Project to ensure appropriate BMPs are constructed. With implementation of Mitigation Measures 4.9.6.1A through 4.9.6.1C, construction water quality impacts would be less than significant.

A *Preliminary Water Quality Management Plan* (Hunsaker & Associates, January 29, 2020, Appendix G-1 to SEIR No. 2) and *PA 14 Hydrological and WQMP* (Hunsaker & Associates, October 4, 2019, Appendix G-3 to SEIR No. 2) was prepared for the Modified Project to assess operational and construction impacts to water quality from storm water and low flow conditions, and provide

recommendations regarding BMPs to reduce water quality impacts. The Water Quality Management Plan (WQMP) concluded the drainage system for existing PA plus the Modified Project Site included low impact development BMPs that would properly detain and treat storm flows resulting in a less than significant. The Prior EIR included Mitigation Measure 4.9.6.2A requiring approval of a final WQMP to ensure appropriate BMPs are included in the project design and constructed. The measure is applicable to the Modified Project to ensure appropriate BMPs are constructed. With implementation of Mitigation Measure 4.9.6.2A, operational water quality impacts would be less than significant.

The Modified Project's impacts regarding water quality are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

(b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project will expand the AHSP boundary to the east, resulting in development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project. The increase in commercial land use will incrementally increase water demands in comparison to the Approved Project. A *Water Supply Assessment Update Memo* (Fuscoe Engineering, October 17, 2019) was prepared to assess the increase in water demand attributable to the Modified Project Site and is included as Appendix G-2 to SEIR No. 2. The 2019 *Water Supply Assessment* (WSA) noted the original water demands projected for the current AHSP (Approved Project) is 795.6 acre-feet per year (AFY), the Modified Project would increase water demands by 6.60 AFY, resulting in water demand for the AHSP as revised by the Modified Project of 802.2 AFY.

The original WSA for the Approved Project was based on data and information from the 2010 UWMP. Since approval of the original WSA, the City has updated and approved the 2015 UWMP. For this reason, the 2019 WSA compares the additional water demands associated with the Modified Project with the findings from the updated 2015 UWMP as well as the 2015 UWMP.

The 2019 WSA includes a comparison of the differences for the Multiple Dry Year (MDY) scenarios contained in the 2010 and 2015 UWMPs. The WSA notes this comparison represents the worst-case scenario, as opposed to the Normal Dry Year (NDY) and Single Dry Year (SDY) scenarios also included in the UWMPs. The MDY from the 2010 UWMP projects a surplus of 6,289 AFY in 2015 increasing to 9,236 AFY from 2015-2035. The MDY from the 2015 UWMP projects a surplus of 5,933

AFY in 2020 decreasing to 2,535 AFY from 2020-2040. The 2019 WSA finds the City has a surplus of water available in the MDY scenarios summarized in the 2010 and 2015 UWMPs.

With the 802.2 AFY water demand from the AHSP as revised by the Modified Project are included in the capacity/surplus calculations from the 2015 UWMP, the Modified Project did not result in a deficit in any scenario. The 2019 WSA water demand calculations for each climate scenario from the 2015 UWMP projections minus the AHSP new water demand are a minimum surplus of 1,733 AFY in 2040 in the MDY scenario, representing the worst case scenario.

The water demands from the Modified Project do not alter the conclusion of the original WSA. The 2019 WSA determined water supplies are available to meet water demands from the revised AHSP in multiple climate scenarios (i.e. Normal, Single Dry, or Multiple Dry Years). The 2019 WSA concluded there are adequate water supplies to serve the Modified Project's anticipated water demand increases as well as other demands within the City's jurisdiction.

Mitigation Measures 4.9.6.3A and 4.9.6.3B from the Prior EIR requiring a project level water conservation plan and water conservation educational program are applicable to the Modified Project. The Modified Project's impacts regarding groundwater depletion are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

(c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off site?

(d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off site?

(e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project will expand the AHSP boundary to the east, resulting in development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project. A Hydrology Analysis (Hunsaker & Associates, November 2019) was prepared to assess hydrology and hydraulic conditions for the entire commercial development resulting from the Modified Project, including both the proposed Modified Project Site as well as the property in the current PA 11 boundary. The hydrology report is included as Appendix G-3 to SEIR No. 2. The report supplements previous hydrology studies prepared for the Approved Project in 2015 and 2017.

The commercial lands in revised PA 11 were divided into two onsite drainage areas A and B. Drainage management (DMA) area A consists of the approximately 10-acre existing commercial pad in PA previously graded as part of the Approved Project. Run-off from DMA A would be collected by a series of private catch basins connected to a private storm drain system within the commercial site, flowing easterly and ultimately connecting to the existing AHSP backbone storm drain system within Bedford Canyon Road at its intersection with the Lift Station access road. The backbone storm drain facilities for DMA A had already been accounted for and designed as part of the overall hydrology master drainage plan for the Approved Project (Tract 36294) to convey the 100-year storm event. The 2019 report confirmed the proposed improvements associated with the Modified Project commercial development in conjunction with the AHSP backbone storm drain facilities would adequately handle the 2-year, 10-year, and 100-year storm events from DMA A. The hydrology report confirmed the proposed storm drain system and AHSP backbone storm drain facilities including the existing infiltration basin in PA 12 would accommodate these flows prior to outletting into Bedford Canyon Wash, and no additional design modifications or mitigation measures are required.

DMA B consists of approximately 13.8 acres adjacent to the north/east side of Tract 36294 consisting of the additional commercial and open space land to be added to PA 11 and PA 12A as part of the Modified Project. Runoff from DMA B would be collected by a series of private catch basins connected to a private storm drain system flowing northeasterly towards and into a proposed water quality basin located in the southeastern portion of revised PA 11. Flows from the proposed water quality basin would outlet into Bedford Canyon Wash at a concrete encased outlet and onto the existing concrete crossing to avoid erosion and scouring of the unlined, soft bottom portions of the Wash. The hydrology report confirmed the proposed storm drain facilities for DMA B included as part of the Modified Project would accommodate the 2-year, 10-year, and 100-year storm event design flows, and no additional design modifications or mitigation measures are required.

All flows generated from PA 11 would be conveyed to Bedford Canyon Wash, where it will follow the path of the Santa Ana Watershed towards the Pacific Ocean. The Prior EIR noted design of the Approved Project included storm water and water quality facilities and prescribed Mitigation Measure 4.9.6.2A requiring approval of a final WQMP that would result in less than significant impacts associated with altering existing drainage patterns, producing erosion and siltation, and exceeding the capacity of the storm water drainage system.

In the event soil is imported from PA 14 to raise the height of the Modified Project Site to within five feet of the exiting commercial pad in PA 12 and to allow gravity flow of wastewater to the sewer lift station near the Bedford Canyon Road/Hudson House Road intersection, a temporary soil bridge will be constructed across Bedford Canyon Wash on the existing concrete crossing to protect the crossing and to maintain elevation across the channel banks. The temporary soil bridge will be equipped with pipe culverts to allow nuisance and storm flows to pass under the soil bridge. A large storm event would

create the possibility of flooding from the bridge acting as a dam. To avoid the possibility of inundation, new Mitigation Measure 4.9.6.3BA has been added to provide start and end dates for the bridge to exist, subject to approval by the Riverside County Flood Control and Water Conservation District.

The Modified Project's impacts regarding alteration of drainage patterns, erosion, runoff, flooding, and polluted runoff are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

(g) Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

(h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project will expand the AHSP boundary to the east, resulting in development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project. The Modified Project Site is currently below the existing commercial pad previously graded in PA 11. The elevation of the Modified Project Site will be raised to within five feet of the existing commercial pad and to allow the sewer system installed on the Modified Project site to gravity flow to the existing sewer lift station located near the Bedford Canyon Road/Hudson House Drive (internal AHSP roadway) intersection. Since the Approved Project was approved, portions of the AHSP has been constructed including a majority of the widening, stabilization and rehabilitation of Bedford Canyon Wash and installation of backbone storm drain infrastructure within internal roadways and some of the PAs within the current AHSP boundary. The Bedford Canyon Wash improvements have created an environmentally superior drainage system designed to accommodate 100-year storm flows from the larger watershed in Bedford Canyon as well as from the AHSP. As discussed in detail as part of items (c), (d), and (e), the proposed storm drain facilities included as part of the Modified Project in conjunction with the installed AHSP backbone storm drain facilities (i.e., existing basin in PA 12; existing backbone storm drain line in Bedford Canyon Road) would accommodate 2-year, 10-year, and 100-year storm event design flows. As a result of existing improvements and those proposed as part of the Modified Project, housing will not be exposed to a 100-year flood hazard and structures will not restrict or redirect storm flows resulting in a 100-year flood hazard. The Modified Project's impacts associated a 100-year flood hazard are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

(i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project will expand the AHSP boundary and result in the development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project. The expanded AHSP boundary is not located in an area near a levee or dam, and therefore the Modified Project Site would not expose people or structures to potential loss, injury or death from flooding associated with a levee or dam failure. The Modified Project's impacts associated with flooding from levee or dam failures are consistent with the impacts identified in the Prior EIR and the level of impact (no impact) remains unchanged. This topic will not be evaluated further in this SEIR.

The Prior EIR concluded development of the Approved Project would not expose people or structures to flooding as a result of levee or dam failure.

(j) Expose people or structures to inundation by seiche, tsunami, or mudflow?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project will expand the AHSP boundary and result in the development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project. The expanded AHSP boundary is not located in an area near bodies of water that would result in inundation from by seiche, tsunami, or mudflow. The Modified Project's impacts associated with inundation by seiche, tsunami, or mudflow are consistent with the impacts identified in the Prior EIR and the level of impact (no impact) remains unchanged. This topic will not be evaluated further in this SEIR.

Cumulative Impacts Associated with the Proposed Project

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project will expand the AHSP boundary and result in the development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project. Development of the Modified Project Site would result in an increase in impervious surfaces in addition to changes in increased commercial land uses and associated pollutant runoff characteristics. Increased impervious surfaces are likely to alter existing hydrology and increase potential pollutant loads. As discussed above, the Modified Project would not introduce a substantially greater percentage of impervious surfaces than originally analyzed in the Prior EIR that would substantially increase storm flows and degrade water quality as a result of an increase in the volume of runoff. As determined in the Prior EIR, the Master Drainage Plan would implement BMPs to manage storm flows and treat runoff and pollutant loads. Similarly, cumulative development projects would be required to minimize their individual storm flow and water quality impacts by implementing tailored BMPs. The Modified Project's cumulative contribution to storm water flows and water quality would be mitigated to less than significant with implementation of mitigation similar to the Approved Project. The Modified

Project's level of impact to hydrology and water quality is consistent with the impacts identified in the Prior EIR and the level of impact (less than significant with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

Mitigation Measures Identified in Prior EIR and Applicable to Modified Project

The following mitigation measures, with minor edits to reflect updated recommendations contained in the geotechnical evaluation prepared for the Modified Project, from the Prior EIR were found to be applicable to the Modified Project:

Hazards and Hazardous Materials	
4.9.6.1A	Prior to the ~~first~~ issuance of a grading permit by the City for any development within PA 11 and 12A of the Arantine Hills Specific Plan, the project proponent shall file a Notice of Intent (NOI) with the Santa Ana Regional Water Quality Control Board (RWQCB) to be covered under the State National Pollutant Discharge Elimination System (NPDES) General Construction Permit for discharge of storm water associated with construction activities. The project proponent shall submit to the City the Waste Discharge Identification Number as proof that the project's NOI to be covered by the General Construction Permit has been filed with the appropriate RWQCB.
4.9.6.1B	Prior to the ~~first~~ issuance of a grading permit by the City for any development within PA 11 and 12A of the Arantine Hills Specific Plan, the project proponent shall submit to the City of Corona and receive approval for a project-specific Storm Water Pollution Prevention Plan (SWPPP). The SWPPP shall include a surface water control plan and erosion control plan citing specific measures to control on-site and off-site erosion during the entire grading and construction period. In addition, the SWPPP shall emphasize structural and nonstructural best management practices (BMPs) to control sediment and nonvisible discharges from the site. Some of the BMPs to be implemented may include (but shall not be limited to) the following: • Sediment discharges from the site may be controlled by the following: sandbags, silt fences, straw wattles and temporary debris basins (if deemed necessary), and other discharge control devices. The construction and condition of the BMPs would be periodically inspected during construction, and repairs would be made when necessary as required by the SWPPP.

	• Materials that have the potential to contribute nonvisible pollutants to storm water must not be placed in drainage ways and must be contained, elevated, and placed in temporary storage containment areas. • All loose piles of soil, silt, clay, sand, debris, and other earthen material shall be protected in a reasonable manner to eliminate discharge from the site. Stockpiles would be surrounded by silt fences and covered with plastic tarps. • The SWPPP would include inspection forms for routine monitoring of the site during the construction phase to ensure NPDES compliance. • Additional BMPs and erosion control measures would be documented in the SWPPP and utilized if necessary. • The SWPPP would be kept on site for the entire duration of project construction and will also be available to the local Regional Water Quality Control Board for inspection at any time. • In the event that it is not feasible to implement the above BMPs, the City of Corona can make a determination that other BMPs would provide equivalent or superior treatment either on site or off site.
4.9.6.1C	The Construction Contractor shall be responsible for performing and documenting the application of BMPs identified in the project-specific SWPPP. Weekly inspections shall be performed on sediment control measures called for in the SWPPP. Monthly reports shall be maintained by the Contractor and available for City inspection. A more frequent inspection schedule may be required based on the condition of the site and as required in the NPDES General Construction Permit. In addition, the Contractor would also be required to maintain an inspection log and have the log on site available for review by the City of Corona and the representatives of the Regional Water Quality Control Board.
4.9.6.2A	Prior to the first issuance of a permit by the City for any project within the Specific Plan area (which includes the issuance of grading permits and building permits), the project proponent shall receive approval from the City of Corona, a project site specific Water Quality Management Plan (WQMP). The WQMP shall specifically identify pollution prevention, source control, treatment control measures, and other BMPs that shall be used on site to control predictable pollutant runoff in order to reduce impacts to water quality to the maximum extent practicable.

4.9.6.3A	Prior to the issuance of grading permits of any development within the Arantine Hills Specific Plan, the project proponent shall submit to the City for review and approval, a water conservation plan. The water conservation plan shall include but shall not be limited to the following: • Drought-tolerant landscaping plan; • Indoor project design features such as low-flush toilets and low-flow faucets; • Outdoor project design features such as subsurface irrigation systems, rain sensors, drip irrigation, or high-efficiency sprinkler heads; • Use of alternative water sources (e.g., reclaimed water); and • Educational materials to be utilized by the project tenants.
4.9.6.3B	Prior to the issuance of occupancy permits for any development within the Arantine Hills Specific Plan, the project proponent shall submit proof to the City that an educational program regarding water usage has been developed for use within the proposed project.
4.9.6.3C	Prior to the issuance of grading permits for soil movement from PA 14, across Bedford Canyon Wash, and to the Modified Project Site, the project Applicant shall construct the soil bridge on the concrete crossing with Bedford Canyon Wash no earlier than May 1 and remove the bridge no later than October 15. Extensions to these time limits can be made at the discretion of the Riverside County Flood Control and Water Conservation District.
~~4.9.6.4A~~	~~Prior to the issuance of grading permits of any development within the Bedford Canyon Wash Channel, the project proponent shall ensure that drainage facilities and/or improvements necessary for the protection of the development project from the 100-year flood are identified and incorporated into the improvement plans that will be reviewed and approved by the City. A floodplain and sediment transport study, along with other required drainage and/or hydraulic studies, shall be submitted to the Riverside County Flood Control and Water Conservation District for review, approval, and consideration of acceptance of the channel improvements associated with the proposed development. Acceptance of development improvements by the Flood Control and Water Conservation District requires approval of the associated plans and pertinent drainage studies including the sediment transport study. These drainage improvements are required to ensure the proposed project will be protected from a 100-year flood. No building permits shall be~~

	~~issued for lots within the 100-year floodplain as mapped for the Conditional Letter of Map Revision (CLOMR), until Bedford Canyon Wash Channel improvements have been constructed and deemed operationally functional by the City of Corona. At the discretion of the City of Corona, building permits for model home sales may be issued prior to the construction of the channel improvements.~~
~~4.9.6.4B~~	~~Prior to the issuance of rough grading permits of for any development within the Arantine Hills Specific Plan, the project proponent shall submit the Conditional Letter of Map Revision (CLOMR) to the Federal Emergency Management Agency (FEMA). Prior to issuance of any building permits, project proponent shall have received approval of the CLOMR certification process by FEMA. The applicant shall secure FEMA's approval for the Letter of Map Revision (LOMR) as appropriate after development is complete.~~

This Page Intentionally Left Blank

3.4.10 Land Use and Planning

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Summary of Impacts Identified in Prior EIR

a) Physically divide established community

The Prior EIR noted the nearest residential land uses to the Approved Project were located to the west and northwest of the AHSP area and were a part of the Eagle Glen Specific Plan development, a golf course residential development. The Prior EIR noted the Eagle Glen community was located on elevations higher than the Approved Project and was separated by a vegetated bluff. The land uses adjacent to the south side of the Approved Project were noted as unincorporated rural residential, to the east the I-15 freeway, and to the west open space and agricultural parcels. The Prior EIR found because

the Approved Project was an infill project with development surrounding most of it, it would not have divided an established community.

Because the existing residential uses surrounding the Approved Project were elevated and separated by undeveloped natural areas (a bluff), implementation of the Approved Project would not physically divide an established community. While the physical construction of barriers would occur (e.g., roadways, natural areas, and open space), the division of an established community would not have occurred because the residential uses in the project vicinity were already separated by existing natural features. The Prior EIR concluded the Approved Project would have no impact associated with physically dividing an established community.

b) Conflict with applicable land use plans, policies, or regulations

The Prior EIR found the change from Agricultural land use and zoning designations to the AHSP land uses to be less than significant because the General Plan states the purpose of the Agricultural designation is to "…allow for the continued production of agricultural lands as interim uses preceding urban development and/or as a long-term use." The City's General Plan further states on Page 83 for the Cajalco Road-Interstate 15/McMillan Site, "The Land Use Element designates these lands consistent with their current use and provides for the future consideration of urban uses that would complement development located on adjoining properties." The Prior EIR found future development on the Approved Project site appeared to have been contemplated. Conflicts with applicable land use plans, policies and regulations approved for the purposes of mitigating environmental impacts were found to be less than significant and no mitigation was required.

c) Conflict with applicable habitat conservation plans

The Prior EIR noted the Approved Project would be required to adhere to the requirements of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP), including its Implementation Agreement and fee mitigation program. The Prior EIR noted the fee mitigation program authorizes local member agencies to collect development impact fees and remit such fees to the Riverside Conservation Authority (RCA). These fees are in turn used to acquire lands suitable for habitat preservation for species covered by the MSHCP. Because compliance with the requirements of the MSHCP is mandatory, the Prior EIR found the Approved Project Specific Plan would be consistent with the MSHCP resulting in a less than significant impact and no mitigation was required.

Impacts Associated with the Modified Project

(a) Physically divide an established community??

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project will expand the AHSP boundary to the east, resulting in development of 143,730

square feet of commercial space that includes a 135-room hotel over and above the Approved Project. The Modified Project Site and associated commercial land uses would be located next to the I-15 freeway to the east, Cajalco Road to the west, and integrated into existing PA 11 to the west.

The Modified Project Site would be located within one of the lower areas within the AHSP boundary. As noted in the Prior EIR, the existing residential communities surrounding the Approved Project are separated by elevation and an undeveloped natural area (a bluff). The Modified Project Site would be added to an existing master planned community, the AHSP, and would not physically divide an established community. While development of the Modified Project Site would incrementally add more physical barriers (e.g., roadways, natural areas, and open space), the division of an established community would not occur because the Modified Project Site's barriers are integrated into the overall AHSP and adequate vehicle and pedestrian linkages are provided. The Modified Project would result in a less than significant associated with physically dividing an established community and no mitigation is required. The Modified Project's impacts regarding this issue are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

(b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project will expand the AHSP boundary to the east, resulting in development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project. The Modified Project Site is currently designated Agricultural by the General Plan and zoned Agricultural. Approval of the Modified Project would change the designation and zoning to General Commercial and Open Space. As noted in the Prior EIR, the General Plan states the purpose of the Agricultural designation is to "…allow for the continued production of agricultural lands as interim uses preceding urban development and/or as a long-term use." The Prior EIR also notes the General Plan states the following regarding the Cajalco Road-Interstate 15/McMillan Site: "The Land Use Element designates these lands consistent with their current use and provides for the future consideration of urban uses that would complement development located on adjoining properties."

Similar to the conclusions in the Prior EIR, future development on the Modified Project Site appears to have been contemplated. With the addition of the Modified Project Site to the AHSP, the Modified Project would be consistent with the objective to consider urban uses that complement development located on adjoining properties. The adjoining property to the Modified Project Site is the balance of the AHSP, and the Modified Project proposes a continuation of Approved Project land uses, consistent

with the stated objective to consider urban uses that complement development located on adjoining properties. The Modified Project would be consistent with the AHSP, and would not conflict with land use plans, policies, or regulations approved for the purpose of mitigating environmental impacts resulting in a less than significant impact and no mitigation is required. The Modified Project's impacts regarding this issue are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

(c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project will expand the AHSP boundary to the east, resulting in development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project. As described in Section 3.4.4 - Biological Resources, a Biological Technical Report (BTR) was prepared for the Modified Project to assess impacts to biological resources from proposed development on the Modified Project Site. The BTR included an MSHCP consistency analysis, and found the Modified Project to be consistent with the MSHPC with implementation of mitigation. Consistent with the Prior EIR, the Modified Project would be required to adhere to the requirements of the MSHCP payment of the applicable mitigation program fee. The Modified Project's impacts associated with consistency with applicable habitat conservation plans are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

Cumulative Impacts Associated with the Proposed Project

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project will expand the AHSP boundary and result in the development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project. As discussed under item (a), the Modified Project would result in an expansion to AHSP and would not physically divide an established community. Similarly, the Modified Project was found to be consistent with applicable land use plans, policies, and regulations adopted for the purpose of avoiding or mitigating an environmental effect. Lastly, the Modified Project was found to be consistent with the MSHCP. The Modified Project's impacts associated with these three topics were determined to be less than significant. All three of these topics are inherently cumulative in nature, and therefore the Modified Project's cumulative impacts are less than significant. The Modified Project's impacts associated with land use and planning are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

Mitigation Measures Identified in Prior EIR and Applicable to Modified Project

The Prior EIR determined no land use and planning mitigation measures were necessary, and the Modified Project did not require any revised or new mitigation measures.

This Page Intentionally Left Blank

3.4.11 Mineral Resources

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Summary of Impacts Identified in Prior EIR

a) Regionally significant mineral resources

b) Locally significant mineral resources

The Prior EIR noted the Approved Project was classified as a MRZ-3 zone, identified as a mineral zone that contains deposits whose significance cannot be evaluated from available data. The Prior EIR noted no mineral extraction activity had occurred or was planned to occur on or near the Approved Project. The Prior EIR found development of the Approved Project would not result in the loss of identified regional or local mineral resources, conversion of an identified mineral resource use, or conflict with existing mineral resource extraction activities. Therefore, the Prior EIR concluded development of the

Approved Project would not result in a loss of statewide, regional, or locally important mineral resources and no impact would occur.

Impacts Associated with the Modified Project

(a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

(b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project will expand the AHSP boundary to the east, resulting in development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project. The Prior EIR noted the Approved Project was classified as a MRZ-3 zone, identified as a mineral zone that contains deposits whose significance cannot be evaluated from available data. The Modified Project Site is also classified as an MRZ-3 zone. Page 4.12-7 of the City General Plan Final EIR states "the City is only required to respond to mineral resource recovery areas that have been designated by the State as MRZ-2 (significant existing or likely mineral deposits)." The Modified Project Site has not recently been used for mineral extraction activity and none has occurred in the past. Development of the Modified Project Site would not result in the loss of identified regional or local mineral resources, conversion of an identified mineral resource use, or conflict with existing mineral resource extraction activities. The Modified Project's impacts regarding mineral resources are consistent with the impacts identified in the Prior EIR and the level of impact (no impact) remains unchanged. This topic will not be evaluated further in this SEIR.

Cumulative Impacts Associated with the Proposed Project

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project will expand the AHSP boundary and result in the development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project. As discussed above, the Modified Project would not affect any known locally or regionally important mineral deposits. The Modified Project is located adjacent to the Approved Project as analyzed in the Prior EIR. While cumulative development would increase demand for mineral resources, development of the Modified Project would not reduce mineral resources and therefore have no significant cumulative impact to mineral resources. The Modified Project's cumulative impacts regarding mineral resources are consistent with the impacts identified in the Prior EIR and the level of impact (no impact) remains unchanged. This topic will not be evaluated further in this SEIR.

Mitigation Measures Identified in Prior EIR and Applicable to Modified Project

The Prior EIR determined no mineral resources mitigation measures were necessary, and the Modified Project did not require any revised or new mitigation measures.

This Page Intentionally Left Blank

3.4.12 Noise

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
a) Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☒
b) Result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c) Cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d) Cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the Specific Plan area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the Specific Plan area to excessive noise levels?	☐	☐	☐	☒

Summary of Impacts Identified in Prior EIR

a) Expose people to excessive noise
b) Expose people to excessive groundborne vibration
c) Substantial permanent increase in ambient noise
d) Substantial temporary or periodic increase in ambient noise

The Prior EIR noted details regarding the Approved Project's grading plans were not available, and therefore the location of potential noise sources required implementation of Mitigation Measure 4.12.6.1A. The measure was prescribed to ensure construction noise impacts at the time development commenced would be adequately mitigation by implementation of a Construction Noise Mitigation Program and Construction Contractor Requirements.

The Prior EIR found outdoor living areas within the AHSP would experience elevated levels of on-site traffic noise. The Prior EIR prescribed Mitigation Measure 4.12.6.2A to reduce on-site traffic noise levels to less than significant levels at the outdoor living areas.

The Prior EIR analyzed the proposed commercial land uses and the potential for stationary noise impacts at adjacent residential land uses. Potential stationary noise sources included rooftop air conditioning units, parking lot vehicle movement, drive-through speakerphones, and loading dock activity. The Prior EIR identified Mitigation Measure 4.12.6.3A, which required a noise analysis to determine the stationary noise impacts from commercial land uses within the Approved Project. Implementation of the measure would reduce impacts from commercial stationary-sources to a less than significant level.

The Prior EIR noted the nearest existing sensitive receptors in the vicinity of the Approved Project were residences to the northwest, across Eagle Glen Parkway, at distances ranging from 174 feet to 972 feet. The Prior EIR found groundborne vibration from grading equipment such as earthmovers and haul trucks at distances of more than 10 feet would not create vibration amplitudes that cause structural damages. The Prior EIR concluded impacts as a result of groundborne vibration during construction to be less than significant and no mitigation was required.

e) Expose people to excessive public airport noise

f) Expose people to excessive private airport noise

The Prior EIR noted the Approved Project was not located within an airport land use plan (ALUP), within two miles of a public airport, and not located in the vicinity of a private airport. For these reasons, the Prior EIR concluded the Approved Project would result in no impact related to exposure of people to excessive noise from a public or private airport.

Impacts Associated with the Modified Project

(a) Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

(b) Result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

(c) Cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

(d) Cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project would expand the AHSP commercial area by 11.64 acres, resulting in 143,730 sf of commercial building area that includes a 135-room hotel added to the Approved Project. The Modified Project also requires import of 440,000 cubic yards of soil to raise the Modified Project Site to within five feet of current PA 11 and to allow sewer to gravity flow the AHSP sewer lift station in PA 12. Two options have been identified to import soil to the Modified Project site. One option is to haul soil in from an off-site source in trucks during the nighttime hours. The trucking operations are expected to require 118 nights. Incoming soil will be trucked onto the Modified Project Site, dumped, and moved and spread around the site. There would also be some overlap of the soil import and daytime grading operations.

A second option for importing soil is to haul soil in scrapers from AHSP PA 14, which is located south of the Modified Project Site across Bedford Wash. The area of PA 14 would be lowered approximately 13 feet to generate the fill, which would be hauled in scrapers down a constructed ramp and across Bedford Canyon Wash to the project site. This import option would occur during daytime hours and require approximately 100 days to complete.

In addition to importing soil, the Modified Project would result in the development of a larger commercial center as compared to the Approved Project, resulting in additional construction emissions than analyzed in the Prior EIR.

As documented in the *Bedford Marketplace Noise Impact Analysis* (January 30, 2020) prepared by Urban Crossroads and included in SEIR Appendix H, noise impacts can occur from construction activities, including soil import and operational activities.

On-site Construction Noise Impacts. Construction related noise impacts are expected to create temporary and intermittent high-level noise conditions at receivers surrounding the Modified Project

Site when certain activities occur at the Project site boundary. Using sample reference noise levels to represent the planned construction activities of the site, construction noise levels at nearby sensitive receiver locations were estimated. The analysis shows the Modified Project-related short-term construction noise levels are expected to approach 63.9 dBA L_{max} at nearby sensitive receiver locations, and will not exceed the 75 dBA L_{max} construction noise level threshold. Therefore, based on the results of this analysis, all nearby sensitive receiver locations will experience less than significant impacts due to site construction noise levels. This topic will not be evaluated further in this SEIR.

Soil Import Noise Impacts from Off-site Soil Source. To bring the Modified Project Site up to an elevation similar (within five feet) of the existing 10-acre commercial pad, import of approximately 440,000 cubic yards of soil is required. One option is to import soil from an off-site location via truck. The import operation is expected to include 250 full loads per night, assuming 15 cubic yards per load, for a total of 3,750 cubic yards per night. To import 440,000 cubic yards, approximately 118 nights of import would be required.

The Project proposes to import soil during the hours (8:00 p.m. to 4:00 a.m.) and complete grading operations both during daytime and nighttime hours. A source of import has been identified from the FST Sand and Gravel Mine, located east of the I-15. The soil would be hauled from the borrow site on Minnesota Road to Sherborn Street to Magnolia Avenue to the I-15 southbound on ramp at Magnolia Avenue, exit at Cajalco Road and enter the Modified Project Site by crossing Cajalco Road from the southbound off-ramp with traffic control. Trucks would return onto Cajalco Road, enter I-15 northbound to Magnolia Avenue to Sherborn Street and travel south to the borrow site.

The proposed soil import/export haul route was specially developed to avoid potentially significant impacts to potential noise sensitive residential land uses. The off-site soil import/export analysis shows that haul truck trips will generate a noise level increase ranging from 0.2 dBA CNEL on I-15 to 5.4 dBA CNEL on Sherborn Street. A review of the haul route shows that the only adjacent noise sensitive residential land uses are located adjacent to I-15. Many of the noise sensitive residential land uses near the I-15 benefit from existing Caltrans sound walls that have been developed to reduce traffic noise. Based on the significance criteria outlined above, the Modified Project soil import/export truck trip-related noise level increases are considered less than significant impacts at the land uses adjacent to roadways conveying Modified Project haul truck traffic. Although the construction noise levels are less than significant, the applicant is required to obtain a Noise Variance in order to conduct the hauling operations during evening and early morning hours (8:00 p.m. to 4:00 a.m.) that are not allowed by the City's noise ordinance that restricts construction to the hours of 7:00 a.m. to 8:00 p.m. Monday through Saturday and 10 a.m. to 6 p.m. Sundays and federal holidays. This topic will not be evaluated further in this SEIR.

The Noise Impact Analysis also includes an assessment of nighttime activities associated with import operations on surrounding sensitive receptors. According to the project Applicant, every effort will be made to limit on-site construction activities particularly during the noise sensitive nighttime hours. For this reason, the Applicant is proposing to limit nighttime operations to permit only the essential equipment needed to support the soil import/export haul truck operations. The results of the soil import/export construction noise analysis, all nearby receiver locations will experience less than significant impacts due to the daytime and nighttime soil import/export noise construction noise levels at the Modified Project Site. This topic will not be evaluated further in this SEIR.

Noise Impacts from PA 14 Soil Source. The second alternative to importing soil to the Modified Project Site would occur by importing soil from PA 14 of the existing AHSP. PA 14 is located to the south of the Modified Project Site and further south of Bedford Canyon Wash. PA 14 is approximately 26 acres, undeveloped, and planned for Medium Density Residential development in the current AHSP. This area forms an elevated plateau above Bedford Canyon Wash. Lowering the elevation of PA 14 by approximately 13 feet would generate approximately 425,000 cubic yards of soil for the Modified Project Site. The remaining 15,000 cubic yards would be generated by lowering PA 14 an additional half foot or importing the remaining soil from an off-site location. Construction noise associated with hauling soil from PA 14 to the Modified Project site would occur during typical days and hours of operation permitted by the City's noise ordinance (7:00 a.m. to 8:00 p.m. Monday through Saturday and 10 a.m. to 6 p.m. Sundays and federal holidays) resulting in a less than significant impact. This topic will not be evaluated further in this SEIR.

Vibration Noise Impacts. Ground-borne vibration levels resulting from construction activities occurring within the Modified Project site were estimated using data from the Federal Transit Administration (FTA). Based on the detailed analysis contained in the Bedford Marketplace Noise Study, the Modified Project is not expected to generate vibration levels exceeding the maximum acceptable vibration standard of 0.05 in/sec root-mean-square (RMS). Vibration levels at the closest sensitive receiver are unlikely to be sustained during the entire construction period, but will randomly occur during the times that heavy construction equipment is operating proximate to the Modified Project site perimeter. Construction will also be restricted to daytime hours consistent with City Noise Ordinance, thereby eliminating potential vibration impact during the sensitive nighttime hours. The potential for the Modified Project to result in exposure of persons to, or generation of, excessive ground-borne vibration is therefore to be less than significant and no mitigation is required. This topic will not be evaluated further in this SEIR.

Operational Stationary Source Noise Impacts. Using reference noise levels to represent the expected noise sources from the Modified Project Site, stationary-source noise levels at nearby sensitive receiver

locations were estimated.[1] The normal activities associated with the Modified Project are anticipated to include roof-top air conditioning units, drive-thru speakerphones, trash enclosures, parking lots, gas station activity, car wash tunnel, car wash vacuums, and outdoor playground activity resulting in noise levels ranging from 32.7 to 40.0 dBA L_{50} at the noise-sensitive off-site receiver locations.

The analysis shows that the Modified Project-related operational noise levels will meet City daytime and nighttime exterior noise level standards at the closest noise-sensitive receiver locations in the study area.[2] Therefore, the operational noise impacts are considered less than significant at all receiver locations. In addition, the Modified Project operational noise level contribution analysis shows Project-related incremental noise level increases to the ambient noise environment would be less than significant at all receiver locations. This topic will not be evaluated further in this SEIR.

The Noise Impact Analysis includes an on-site exterior noise impact analysis to determine the traffic noise exposure and to identify potential necessary noise abatement measures for the Modified Project. It is expected that the primary source of noise impacts to the Modified Project Site will be traffic noise from the I-15. To control transportation related noise sources, the City has adopted exterior and interior noise standards by land use type.

Operational Traffic Noise Impacts. The City has adopted an exterior noise standard of 65 dBA CNEL for noise sensitive land uses that include residential, lodging, hospitals, schools, and parks.[3] The exterior noise standards typically apply to outdoor areas where people congregate. Traffic noise level impacts were assessed by estimating the resulting CNEL noise levels for study area roadway segment with the addition of the Modified Project's traffic to existing, Interim Year 2021, and Future Year 2035 traffic conditions. The significance of traffic noise impacts was assessed based on the following criteria:

When the noise levels at existing and future noise-sensitive land uses (e.g. residential, etc.):

- are less than 60 dBA CNEL and the Modified Project creates a readily perceptible 5 dBA CNEL or greater Project-related noise level increase; or
- range from 60 to 65 dBA CNEL and the Project creates a barely perceptible 3 dBA CNEL or greater Project-related noise level increase; or
- already exceed 65 dBA CNEL, and the Project creates a community noise level increase of greater than 1.5 dBA CNEL (FICON, 1992).

[1] See Exhibit 9-A: Sensitive Receiver Locations, *Bedford Marketplace Noise Impact Analysis*, SEIR Appendix H.
[2] See Exhibit 3-B: Interior and Exterior Noise Standards, *Bedford Marketplace Noise Impact Analysis*, SEIR Appendix H.
[3] See Exhibit 3-B: Interior and Exterior Noise Standards, *Bedford Marketplace Noise Impact Analysis*, SEIR Appendix H.

Existing with Modified Project conditions will result in CNEL values on study area roadways ranging from 64.5 to 71.4 dBA. The Modified Project will generate a noise level increase of up to 2.6 dBA CNEL on the study area roadway segments. Interim Year 2021 with Modified Project conditions will result in CNEL values ranging from 64.8 to 71.7 dBA. The Modified Project will generate a noise level increase of up to 0.2 dBA CNEL on the study area roadway segments. These Project-related noise level increases are considered less than significant under Interim Year 2021 with Modified Project conditions at the land uses adjacent to study area roadways based on the significance criteria. Future Year 2035 with Modified Project conditions will range from 66.6 to 72.1 dBA CNEL. The Modified Project will generate a noise level increase of up to 2.6 dBA CNEL on the study area roadway segments. Based on the significance criteria, the Project-related noise level increases are considered less than significant under Future Year 2035 with Project conditions at the land uses adjacent to the study area roadways. Impacts are considered to be less than significant. The Prior EIR included Mitigation Measure 4.12.6.2A that required submittal and approval of a final noise analysis to confirm CNEL traffic noise levels resulting from the Approved Project fall within the 65 dBA CNEL and 70 dBA CNEL noise contours for Eagle Glen Parkway from Masters Drive to Bedford Canyon Road, "A" Street, and I-15. As a result of the conclusions contained in this SEIR, implementation of Mitigation Measure 4.12.6.2A is not required. This topic will not be evaluated further in this SEIR.

Cumulative Impacts Associated with the Proposed Project

Less Than Significant Impact/No Changes or No New Information Requiring Preparation of an EIR. The Modified Project would expand the AHSP boundary and result in additional commercial development, generating additional trips and traffic volume increases to the local and regional transportation system. The Modified Project would also generate temporary construction noise and new stationary noise sources. As discussed previously, construction and operational noise impacts from the Modified Project were assessed. In all scenarios, the contribution of noise is based against ambient conditions and in the case of traffic, future traffic projections. No foreseeable projects are close enough to the Modified Project Site to alter the ambient condition and create cumulative impacts. Furthermore, the future traffic projections represent a cumulative impact assessment. As concluded above, the Modified Project's impacts are consistent with the impacts identified in the Prior EIR and the level of impact (significant and unavoidable with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

Mitigation Measures Identified in Prior EIR and Applicable to Modified Project

The following mitigation measures from the Prior EIR were found to be applicable to the Modified Project:

Noise	
4.12.6.1A	Prior to the approval of a tentative tract map for each residential area or approval of commercial or industrial uses within the Specific Plan area, the project proponent shall prepare, submit, and receive approval from the City, a final noise analysis. This final noise analysis shall be completed at the tract map level for each residential area or commercial/industrial area when the precise grading and the architectural plans are available to ensure that all noise sensitive areas will meet the City of Corona noise standards. The final noise analysis shall include but shall not be limited to the following: • *Construction Noise Mitigation Program.* The program shall include noise monitoring at selected noise sensitive locations, monitoring complaints procedures, identification of haul routes (if applicable), and identification and mitigation of the major sources of noise. • *Construction Contractor Requirements.* These requirements shall include contract provisions regarding construction equipment noise features and equipment staging procedures.
4.12.6.2A	Prior to the approval of a tentative tract map for each residential area or approval of commercial or industrial uses within the Specific Plan area within the 65 dBA CNEL and 70 dBA CNEL noise contours for Eagle Glen Parkway from Masters Drive to Bedford Canyon Road, "A" Street, and I-15, the project proponent shall prepare, submit, and receive approval from the City, a final noise analysis. This final noise analysis shall be completed at the tract map level for each residential area or commercial/industrial area when the precise grading and the architectural plans are available to ensure that all noise sensitive areas will meet the City of Corona noise standards.
4.12.6.3A	Prior to the approval of a tentative tract map for each residential area adjacent to commercial or industrial uses within the Specific Plan area, the project proponent shall prepare, submit, and receive approval from the City, a final noise analysis. This final noise analysis shall be completed at the tract map level for each residential area or commercial/industrial area when the precise grading and the architectural plans are available to ensure that all noise sensitive areas will meet the City of Corona noise standards.

This Page Intentionally Left Blank

3.4.13 Population and Housing

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial amounts of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Summary of Impacts Identified in Prior EIR

a) Induce substantial population growth

The Prior EIR noted the Approved Project was originally designated and zoned Agriculture and would result in a direct increase in population. However, the Prior EIR concluded the Approved Project but

would not induce population growth beyond the growth attributable to the residential land uses within the AHSP.

b) Displace housing

c) Displace people

The Prior EIR noted the Approved Project was originally designated and zoned Agriculture, and the land had never been occupied by residential uses. No residential structures were located within the Approved Project limits with the exception of a mobile trailer used by an on-site property caretaker associated with the past history of agricultural uses. The Prior EIR found development of the Approved Project would not displace existing housing and residents, and would not require the construction of replacement housing elsewhere in the City. In the absence of any residential displacement or a substantial change in the availability of residential units, the Prior EIR concluded no significant impact related to this issue would occur.

Impacts Associated with the Modified Project

(a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project would expand the AHSP boundary to the east, resulting in development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project. The Modified Project would indirectly contribute to incremental population growth by expanding the neighborhood commercial development component within the AHSP, in an area currently underserved by local commercial retail and services. The additional commercial development would contribute to meeting existing demand, and would not induce growth and impacts would be less than significant. The Modified Project would also result in the extension of local serving roads and infrastructure, but these improvements would facilitate access and operation of the commercial uses and would not induce growth. Impacts associated with growth inducement would be less than significant and no mitigation is required. The Modified Project's impacts regarding growth inducement are consistent with the impacts identified in the Prior EIR and the level of impact (no impact) remains unchanged. This topic will not be evaluated further in this SEIR.

(b) Displace substantial amounts of existing housing, necessitating the construction of replacement housing elsewhere?

(c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project will expand the AHSP boundary to the east, resulting in development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project. The Modified Project Site is currently designated and zoned Agriculture, and has never been occupied by residential uses. No residential structures are located within the Modified Project Site. The Modified Project would not displace existing housing and residents, and would not require the construction of replacement housing elsewhere in the City. The Modified Project's impacts regarding growth inducement are consistent with the impacts identified in the Prior EIR and the level of impact (no impact) remains unchanged. This topic will not be evaluated further in this SEIR.

Cumulative Impacts Associated with the Proposed Project

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. As discussed above, the Modified Project would not directly increase population or growth, induce growth, or remove an obstacle to growth. The Modified Project incrementally expands an already approved commercial center to serve surrounding residential neighborhoods. No new or substantially greater population growth impacts would occur with implementation of the Modified Project when compared to those identified in the Prior EIR. Implementation of the proposed project would not result in a cumulatively significant population or housing impact, nor would the proposed Modified Project uses significantly induce growth in areas where growth was not previously anticipated. The Modified Project's cumulative impacts regarding population and housing are consistent with the impacts identified in the Prior EIR and the level of cumulative impact (no impact) remains unchanged. This topic will not be evaluated further in this SEIR.

Mitigation Measures Identified in Prior EIR and Applicable to Modified Project

The Prior EIR determined no population and housing mitigation measures were necessary, and the Modified Project does not require any revised or new mitigation measures.

This Page Intentionally Left Blank

3.4.14 Public Services

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection?	☐	☐	☐	☒
b) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for police services?	☐	☐	☐	☒

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
c) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for schools?	☐	☐	☐	☒
d) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for parks?	☐	☐	☐	☒

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
e) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for other public facilities?	☐	☐	☐	☒

Summary of Impacts Identified in Prior EIR

a) Fire protection facilities

The Prior EIR noted development of the Approved Project would be designed, constructed, and operated per applicable fire prevention/protection standards established by the Corona Fire Department (CFD), other City Departments, and the State. The Prior EIR noted these requirements would result in adequate provisions for smoke alarms; sprinklers; building and emergency access; adequate emergency notification; and fire hydrant sizing, pressure, and siting. With provision of the required site related fire safety measures and payment of City impact fees to fund future fire facilities, the Prior EIR concluded the Approved Project would not result in the need to renovate existing or construct new fire protection facilities the construction of which would create an impact to the environment. Impacts were determined to be less than significant and no mitigation was required.

b) Police facilities

The Prior EIR noted development of the Approved Project would be designed, constructed, and operated per applicable public safety standards established by the Corona Police Department (CPD), other City Departments, and the State. With provision of the required site related public safety measures and payment of City impact fees to fund future police facilities, the Prior EIR concluded the Approved Project would not result in the need to renovate existing or construct new police facilities the construction of which would create an impact to the environment. Impacts were determined to be less than significant and no mitigation was required.

c) School facilities

The Prior EIR noted school fees are uniformly applied to all development in the City, and the payment of such fees would ensure significant impacts associated with the renovation of existing or construction of new school facilities would not occur. The Prior EIR noted payment of the required school fees provides "full and complete" mitigation for school-related impacts, and impacts would be less than significant with no mitigation required.

d) Park facilities

Park and recreational facilities as they pertain to the Modified Project are analyzed in Section 3.4.15 (Recreation) of SEIR No. 2.

e) Other facilities

The Prior EIR noted the increase in population from the Approved Project would not substantially increase demand on other public facilities. Therefore, the Prior EIR concluded the Approved Project would not result in the need to renovate existing or construct new public facilities. Impacts were determined to be less than significant and no mitigation was required.

Impacts Associated with the Modified Project

(a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project would expand the AHSP boundary to the east, resulting in development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project and incrementally increasing demand on fire protection services. In the same manner as discussed in the Prior EIR, development of the Modified Project would be designed,

constructed, and operated per applicable fire prevention/protection standards established by the CFD, other City Departments, and the State. The Modified Project would be required to pay development impact fees to fund the construction of future fire facilities. With provision of the required site related fire protection safety measures and payment of City impact fees, the Modified Project would not result in the need to renovate existing or construct new fire protection facilities the construction of which would create an impact to the environment. Impacts would be less than significant and no mitigation is required. The Modified Project's impacts regarding construction of fire protection facilities are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

(b) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for police services?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project would expand the AHSP boundary to the east, resulting in development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project and incrementally increasing demand on police services. In the same manner as discussed in the Prior EIR, development of the Modified Project would be designed, constructed, and operated per applicable public safety standards established by the CPD, other City Departments, and the State. With provision of the required site related public safety measures and payment of City impact fees, the Modified Project would not result in the need to renovate existing or construct new police facilities the construction of which would create an impact to the environment. Impacts would be less than significant and no mitigation is required. The Modified Project's impacts regarding construction of police facilities are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

(c) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for schools?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project would expand the AHSP boundary to the east, resulting in development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project and incrementally increasing demand on school services. In the same

manner as discussed in the Prior EIR, development of the Modified Project would be required to pay applicable school fees. Payment of the required school fees provides "full and complete" mitigation for school-related impacts, and impacts from the Modified Project would be less than significant with no mitigation required. The Modified Project's impacts regarding construction of school facilities are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

(d) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for parks?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. Park and recreational facilities as they pertain to the Modified Project are analyzed in Section 3.4.15 (Recreation) of SEIR No. 2.

(e) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for other public facilities?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project would expand the AHSP boundary to the east, resulting in development of 143,730 square feet of commercial space that includes a 135-room hotel over and above the Approved Project, which would incrementally increase demand on other public facilities. In the same manner as described in the Prior EIR, the incremental increase in population from the Modified Project would not substantially increase demand on other public facilities and the Modified Project would not result in the need to renovate existing or construct new public facilities, the construction of which would create an impact to the environment. The Modified Project's impacts regarding construction of other public facilities are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

Cumulative Impacts Associated with the Proposed Project

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. In the same manner as described in the Prior EIR, new development within the service areas of the CFD and CPD would be required to adhere to conditions established by fire and police service providers, and pay the applicable fees to ensure adequate facilities are provided. New school

facilities would be constructed as determined by Corona-Norco Unified School District to accommodate growth in the local student population. School districts are engaged in planning new facilities in anticipation of future local and regional growth. Each district requires the payment of development fees to provide for new school services and/or facilities. The Prior EIR concluded the payment of applicable fees would reduce cumulative public services impacts to a less than significant level. The Modified Project would be required to pay applicable development impact fees. Cumulative development projects would also pay development fees. Since the Modified Project does not substantially increase demand for public services relative to the Approved Project, cumulative impacts to public services would also be less than significant. The Modified Project's cumulative impacts regarding public services are consistent with the impacts identified in the Prior EIR and the level of cumulative impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

Mitigation Measures Identified in Prior EIR and Applicable to Modified Project

The Prior EIR determined no public services mitigation measures were necessary, and the Modified Project does not require any revised or new mitigation measures.

This Page Intentionally Left Blank

3.4.15 Recreation

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Summary of Impacts Identified in Prior EIR

a) Increased use of existing recreational facilities

The Prior EIR found the Approved Project would increase the City's population by 6,249 people, resulting in an increase in demand for parks and recreational facilities. The Prior EIR noted the City had a surplus of approximately 1,725 acres of parkland. With the increase in people that would have resulted from the development of the Approved Project, the Prior EIR found the City would maintain

a surplus of parkland and recreation facilities to accommodate existing residents and residents from the Approved Project. Impacts were determined to be less than significant and no mitigation was required.

b) New or Physically Altered Recreation and Park Facilities

The Prior EIR noted the Approved Project included 9.9 acres of park land and recreation uses consisting of two neighborhood parks and two mini parks. In addition to the park facilities, the Approved Project would preserve approximately 81.5 acres of open space including a continuous pedestrian/bicycle trail constructed along the north side of the Bedford Canyon Wash.

The Prior EIR assessed the impacts from the construction of parks and open space within the Approved Project and concluded construction of those amenities would not have resulted in an adverse physical effect on the environment. Impacts associated with this issue were considered to be less than significant and no mitigation was required.

Impacts Associated with the Modified Project

(a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project would expand the AHSP commercial area by 11.64 acres. However, the Modified Project does not generate a new population of park users. Park demand is linked to residential development whereby residents place additional demand on park and recreation facilities. The Modified Project provides commercial uses that serve surrounding residential neighborhoods and does not generate new park users. Additionally, the Modified Project would pay applicable Parkland and Open Space development impact fees. The increase in commercial development associated with the Modified Project would also not remove existing park or recreation space and would not result in a net deficit of parklands that could increase the use of existing parks or accelerate their deterioration, requiring expansion or replacement that would result in an environmental impact. Therefore, no new or substantially greater impacts would occur with implementation of the Modified Project when compared to those identified in the Prior EIR. The Modified Project's impacts associated with expansion of existing parks or construction of new parks is consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

(b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project would expand the AHSP commercial area by 11.64 acres. The increase in commercial development from the Modified Project does not include parks or recreational facilities, and the planned parks and open space in the existing AHSP would not be affected. The recreational facilities in the AHSP were analyzed for physical effects to the environment in the Prior EIR. Therefore, no new or substantially greater impacts would occur with implementation of the Modified Project when compared to those identified in the Prior EIR. The Modified Project's impacts associated with the construction of new recreational facilities are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

Cumulative Impacts Associated with the Proposed Project

Less Than Significant Impact/No Changes or No New Information Requiring Preparation of an EIR. The Modified Project would expand the AHSP boundary and result in additional commercial development. However, the Modified Project does not generate a new population of park users. Park demand is linked to residential development whereby residents place additional demand on park and recreation facilities. The Modified Project provides commercial uses that serve surrounding residential neighborhoods and does not generate new park users. Additionally, the Modified Project would pay applicable Parkland and Open Space development impact fees. Therefore, the Modified Project does not contribute to a cumulative impact on park and recreation facilities. The Modified Project's impacts associated with the construction of park and recreation facilities are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

Mitigation Measures Identified in Prior EIR and Applicable to Modified Project

No mitigation measures related to recreation were outlined in the Prior EIR. As discussed above, no new impact has been identified. Lacking any new impacts, no new mitigation measures or new alternatives are required for the Modified Project.

This Page Intentionally Left Blank

3.4.16 Transportation and Traffic

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

Summary of Impacts Identified in Prior EIR

a) Conflict with established measures of effectiveness rating performance of circulation system

b) Conflict with CMP LOS standards and travel demand measures

For year 2019, the Prior EIR concluded the Approved Project would create or contribute to LOS performance standard failures at five study area intersections. For year 2035, the Prior EIR concluded the Approved Project would create or contribute to LOS performance standard failures at eight study area intersections. The identified performance standard failures were considered significant impacts, requiring mitigation. Mitigation measures forming a long list of local and regional transportation improvements were prescribed in the Prior EIR to mitigate project direct and cumulative impacts.

At the time the Prior EIR was approved, the Riverside County Transportation Commission (RCTC) had plans to reconstruct the I-15/Cajalco Road interchange with a new and widened Cajalco Road

bridge over the I-15 freeway mainline lanes and new freeway ramps. The Prior EIR acknowledged the Approved Project developer would advance the total cost for the construction of the I-15/Cajalco Road interchange improvements, but the construction completion date of the interchange improvement project was uncertain. The Prior EIR concluded that all traffic improvements would ultimately mitigate traffic impacts to less than significant once installed, and established occupancy limits that prohibited development of Phase 2 of the Approved Project until the interchange improvements were completed and operational. Because the identified local roadway and Cajalco Road freeway interchange improvement completion dates were uncertain, the Prior EIR determined traffic impacts would be significant and unavoidable at those locations until those improvements were installed.

c) Air traffic

The Prior EIR noted the nearest airport to the Approved Project was the Corona Municipal Airport, located approximately 6.5 miles to the northwest. The Prior EIR concluded the Approved Project was not located within any airport influence area for the Corona Municipal Airport or any other airport in the vicinity. Additionally, the Prior EIR concluded the Approved Project did not include any structure or features that would alter air traffic patterns or the level of air traffic at the Corona Municipal Airport. Therefore, no impacts to air safety would have occurred and no mitigation was required.

d) Design hazards

The Prior EIR found the Approved Project had the potential to create temporary impacts associated with the construction of infrastructure improvements, which could cause temporary hazards. However, the Prior EIR found temporary construction activities are reviewed on a project-by-project basis by the City and are required to ensure adequate traffic flow as part of a construction traffic management plan. At the time infrastructure improvement plans are approved for construction, the Approved Project would implement measures in accordance with a construction traffic management plan to maintain traffic flow and local access resulting in a less than significant impact.

e) Inadequate emergency access

The Prior EIR noted roadway improvements resulting from implementation of the Approved Project would improve traffic circulation in the surrounding area, and correspondingly improve emergency vehicle access. Development of the Approved Project would comply with standards established by the City Public Works Department and Fire Department enabling emergency access, as well compliance with applicable Uniform Fire Code standards, as part of the City's permitting process. The Prior EIR noted these standards included compliance with street width standard plans as determined in the California Building Code (CBC), Master Plan of Streets, and the Uniform Fire Code. The Prior EIR concluded implementation of the Approved Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan with adherence to existing procedures, and no mitigation was required.

f) Conflict with alternative modes of transportation

The Prior EIR noted the Approved Project would be conditioned to provide sidewalks and landscaping treatments to allow pedestrian access throughout the site and Class 2 bike lanes to allow bicycle traffic throughout the site and area. The Prior EIR noted the Approved Project design was consistent with applicable City standards, which support and/or facilitate alternative modes of transportation. Policies, plans, and/or programs supporting alternative transportation would be incorporated as applicable. Consequently, the Prior EIR found the Approved Project would be consistent with alternative modes of transportation as a result of existing City design review procedures.

Impacts Associated with the Modified Project

(a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

(b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project would expand the AHSP commercial area by 11.64 acres, resulting in 143,730 sf of commercial building area that includes a 135-room hotel added to the Approved Project. A *Traffic Study* prepared for the Modified Project (Urban Crossroads, January 10, 2020) assessed impacts associated with the incremental increase in commercial development and is included and included in Appendix I. The Traffic Study found the Modified Project would generate 2,061 daily, 281 a.m. peak hour, and 285 p.m. peak hour trips over and above the Approved Project and assessed the Modified Project's impacts on Interim Year 2021 and Future Year 2035 time horizons. Because the original approval was seven years ago and there have been two amendments to the AHSP since that time, the traffic study for the Modified Project was based on existing traffic volumes (2017 and 2018) used to develop Interim Year 2021 background traffic volumes. Future Year 2035 traffic volume forecasts from the Prior EIR were used for the Modified Project traffic study.

At the time the Prior EIR was approved, the I-15/Cajalco Road interchange improvement project had begun construction. Since that time, the interchange improvements have been largely completed including a 6-lane bridge deck on Cajalco Road over the I-15 freeway mainline lanes replacing the old 2-lane bridge. The entire improvement project is nearly finished with remaining improvements including the freeway on- and off-ramps under construction, and a ceremonial grand opening is

scheduled for March 2020. For Interim Year (2021) and Future Year 2035 conditions, the I-15/Cajalco Road interchange improvement project was considered to be completed.

In addition to the regional I-15/Cajalco Road interchange project, improvements to local intersections and roadways in the vicinity of the Approved Project have taken place since approval of the Prior EIR including installation of traffic signals at the intersections of Masters Drive/Eagle Glen Parkway and Clementine Way/Eagle Glen Parkway.

In summary, assessment of the Modified Projects traffic impacts was conducted assuming the following improvements were installed and operational:

- Widening of Cajalco Road from a 2-lane divided roadway to a 4-lane divided roadway between Bedford Canyon Road and the I-15 Southbound Ramps
- Widening of Cajalco Road from a 2-lane divided roadway to a 6-lane divided roadway between the I-15 Southbound and Northbound Ramps
- Widening of Cajalco Road from a 5-lane divided roadway to a 6-lane divided roadway between the I-15 Northbound Ramps and Temescal Canyon Road
- Installation of a traffic signal at Masters Drive/Eagle Glen Parkway
- Installation of a traffic signal at Clementine Way/Eagle Glen Parkway
- Completion of Bedford Canyon Road south of Eagle Glen Parkway including a roundabout at the Bedford Canyon Road/Hudson House Drive (AHSP internal roadway providing connection to the Bedford residential community)
- Installation of three Bedford Marketplace driveways on Bedford Canyon Road to provide site access

The Interim Year 2021 assessment concluded the Modified Project would contribute to previously identified LOS failures that would occur with or without the Modified Project at the following four study area intersections:

- Masters Drive/California Avenue
- Masters Drive/Christopher Lane
- Via Castilla Street/Masters Drive
- Morales Way/Masters Drive

The Prior EIR included Mitigation Measures 4.16.6.2A and 4.16.6.3B to address all four LOS failures, requiring the Approved Project's fair share contribution towards the construction of traffic signals or roundabouts at those intersections. With implementation of the intersection control improvements defined in Mitigation Measures 4.16.6.2A and 4.16.6.3B, the resulting LOS would be improved to within the performance standards. Because the completion dates for these improvements are uncertain, the Prior EIR determined impacts would be significant and unavoidable until the improvements are

installed. The same conclusion applies to the Modified Project; the additional traffic generated by the Modified Project would not change or expand the intersection control improvements necessary to improve LOS, therefore, Mitigation Measures 4.16.6.2A and 4.16.6.3B remain applicable and unchanged. The Modified Project's impacts associated with LOS impacts in the Interim 2021 condition is consistent with the impacts identified in the Prior EIR and the level of impact (significant and unavoidable with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

The Future Year 2035 assessment concluded the Modified Project would contribute to previously identified LOS failures that would occur with or without the Modified Project at the following eight study area intersections:

- Masters Drive/California Avenue
- Masters Drive/Bennett Avenue
- Bedford Canyon Road/Eagle Glen Parkway
- I-15 SB Ramps/El Cerrito Road
- Temescal Canyon Road/Cajalco Road
- Masters Drive/Christopher Lane Corona
- Via Castilla Street/Masters Drive Corona
- Morales Way/Masters Drive

The Prior EIR included Mitigation Measures 4.16.6.1A, 4.16.6.2A, 4.16.6.3B, and 4.16.6.4A to address all of the previously identified LOS failures, requiring construction of improvements by the Approved Project or fair share contributions towards the construction of improvements. With implementation of the improvements defined in Mitigation Measures 4.16.6.1A, 4.16.6.2A, 4.16.6.3B, and 4.16.6.4A, the resulting LOS would be improved to within the performance standard. Because the completion dates for these improvements are uncertain, the Prior EIR determined impacts would be significant and unavoidable until the improvements are installed. The same conclusions apply to the Modified Project; the additional traffic generated by the Modified Project would not change or expand the intersection control improvements necessary to improve LOS in the Future Year 2035, therefore, Mitigation Measures 4.16.6.1A, 4.16.6.2A, 4.16.6.3B, and 4.16.6.4A remain applicable and unchanged. The Modified Project's impacts associated with LOS impacts in the Future Year 2035 conditions are consistent with the impacts identified in the Prior EIR and the level of impact (significant and unavoidable with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

In addition to mitigation of off-site intersections, the Modified Project plans include installation of a right in/out only secondary driveway, a full access signalized main driveway, and a full access secondary driveway on Bedford Canyon Road into the proposed commercial development. The two full access driveways will require installation of inbound left turn lanes. These project design elements will be implemented as part of the precise plan and do not require creation of a new mitigation measure.

While not analyzed in the Prior EIR, the City has adopted Vehicle Miles Traveled (VMT) Guidelines in response to the passage of Senate Bill 743, which becomes effective July 1, 2020. VMT is calculated using the City's traffic model, then compared to Service Population (SP), which consists of population and employment. Project VMT is considered a significant impact if the project generates VMT/SP above the Citywide VMT/SP. The Western Riverside Council of Governments (WRCOG) have estimated the total VMT per service population for the traffic analysis zone surrounding the Modified Project Site at 27.78, in comparison to the average in Corona of 30.52 VMT/SP.

The Modified Project proposed mix of uses provides diversity that would reduce VMT by internal trip capture. By providing a mix of hotel, restaurant, retail, and day care uses within an underserved area of the City including the surrounding Eagle Glen and Bedford residential communities, typical "isolated use" travel characteristics are estimated to be substantially reduced.

The Modified Project is projected to incrementally increase the number of employees from 320 to 582, an increase of 262 employees. Accounting for the mix of uses and the increase in number of employees, the TIA determined the Modified Project would generate approximately 29 VMT/SP. Since this is less than the City average, VMT impacts are considered to be less than significant and no mitigation is required.

(c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project would expand AHSP PA 11 to the east, towards the I-15. Development of the Modified Project would not impact air traffic or air travel. The Modified Project's impacts associated with air traffic patterns are consistent with the impacts identified in the Prior EIR and the level of impact (no impact) remains unchanged. This topic will not be evaluated further in this SEIR.

(d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project would expand AHSP PA 11 to the east, towards the I-15. The Modified Project would expand the commercial development within the AHSP. Development of Modified Project Site would comply with existing development review procedures in accordance with the municipal code, zoning code, and the AHSP that would reduce hazards (e.g., intersection design, roadway design, driveway design, etc.). The design of the Modified Project has been reviewed by the project traffic engineer and City's engineering and fire departments for inconsistencies with design standards and hazardous conditions, and none have been identified. To accommodate additional vehicle trips beyond that analyzed in the Prior EIR, the TIA for the Modified Project recommended a left turn pocket length

of 200 feet for the center signalized entry and a left turn pocket length of 100 feet for the southern project entry, which have been incorporated into the Modified Project design. Therefore, the Modified Project would not create new hazardous conditions or incompatible land uses. The Modified Project's impacts associated with hazards are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

(e) Result in inadequate emergency access?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project would expand AHSP PA 11 to the east, towards the I-15. Other than site access driveways to/from the expanded commercial area in PA 11, no new internal roadways would be constructed and no new off-site roadways would be constructed. In the same manner as detailed in the Prior EIR, roadway improvements associated with the Modified Project would improve traffic circulation within the AHSP area and would, therefore, improve access for emergency vehicles. The Modified Project's driveways on Bedford Canyon Road would be required to comply with standards established by the City Public Works Department. The size and location of fire suppression facilities (e.g., hydrants) and fire access routes would be required to conform to Fire Department standard. A Fire Access Plan, detailing fire lanes and hydrant locations has been prepared and approved by Corona Fire. Development of the Modified Project would conform to applicable California Fire Code standards, California Building Code (CBC) standards, and the Master Plan of Streets. The Modified Project's impacts associated with emergency access are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

(f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Modified Project would result in the development of the Bedford Marketplace and bring a neighborhood commercial center and associated commercial retail and services close to the Bedford and Eagle Glen communities. The commercial center is designed to add a 6-foot wide trail adjacent to the existing 8-foot sidewalk on the western boundary of the commercial center along the Bedford Canyon Road frontage. The Modified Project site plan also permits pedestrian linkages to provide connectivity from the Bedford Canyon Road/Eagle Glen Parkway intersection towards the south and the recently constructed trail system at Bedford Canyon Wash, a planned dog park, and to the developing Bedford residential community.

The Modified Project would not affect the other portions of the planned roadway system within the AHSP, including internal roadway lanes, bicycle facilities, bus routes and pedestrian linkages. No new

impacts would occur as a result of the Modified Project. The Modified Project's impact regarding alternative modes of transportation are consistent with the impacts identified in the Prior EIR and the level of impact (no impact) remains unchanged. This topic will not be evaluated further in this SEIR.

Cumulative Impacts Associated with the Proposed Project

Less Than Significant Impact/No Changes or No New Information Requiring Preparation of an EIR. The Modified Project would expand the AHSP boundary and result in additional commercial development, generating additional trips and traffic volume increases to the local and regional transportation system. As discussed previously, traffic impacts from the Modified Project were assessed at Future Year 2035 conditions, which represents a cumulative impact assessment. As concluded above, the Modified Project's impacts associated with LOS impacts in the cumulative scenario (Future Year 2035) are consistent with the impacts identified in the Prior EIR and the level of impact (significant and unavoidable with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

Mitigation Measures Identified in Prior EIR and Applicable to Modified Project

The following mitigation measures identified in the Prior EIR remain applicable to the Approved Project. The Modified Project would not cause new or more intense significant impacts and no new mitigation is required for the Modified Project.

Transportation and Traffic	
4.16.6.1A	The master developer shall construct the improvements identified below as mitigation measures for 2017 plus Phase 1 conditions to improve levels of service in accordance with City requirements: • Street "C"/Eagle Glen Parkway: Prior to issuance of a Certificate of Occupancy for the first model home, install a traffic signal, a northbound left-turn lane, a northbound right-turn lane, and a westbound left-turn lane. • Bedford Canyon Road/Eagle Glen Parkway: Prior to issuance of the first production home building permit, add a northbound left-turn lane, a northbound through/right lane, modify striping to provide a southbound through lane, modify striping to provide a shared eastbound through/right lane, and a westbound left-turn lane.

4.16.6.2A	Prior to issuance of the first production home building permit, the master developer shall pay a 64% fair share contribution towards the construction of a traffic signal at the Masters Drive/California Avenue intersection.
4.16.6.3A	Prior to the issuance of the first building permit after Phase 1, the master developer shall construct those improvements identified below as mitigation measures for year 2017 plus project conditions to improve levels of service in accordance with City requirements. • Masters Drive/Eagle Glen Parkway: Install a traffic signal. • Bedford Canyon Road/Eagle Glen Parkway: Add a northbound right-turn lane with northbound right-turn overlap phasing, modify striping to provide a shared southbound left/through lane, and add a westbound left-turn lane. • Street "C"/Street "B": Install a roundabout and an all-way lane at all approaches. • Street "A" – Street "D"/Street "B": Install a roundabout and an all-way lane at all approaches. • Street "A"/Main Driveway (TAZ 4): Install a traffic signal, two northbound through lanes, a southbound left-turn lane, two southbound through lanes, a westbound left-turn lane, and a westbound right-turn lane. • Street "A"/South Driveway (TAZ 4): Install a stop sign on the westbound approach, two northbound through lanes, a southbound left-turn lane, two southbound through lanes, a westbound left-turn lane, and a single westbound approach lane.
4.16.6.3B	Prior to the issuance of the first building permit after Phase 1, the master developer shall pay a 99% fair share contribution towards the construction of either a roundabout or traffic signal at the Morales Way/Masters Drive intersection; a 27% fair-share contribution toward the construction of either a roundabout or traffic signal at the Masters Drive/Christopher Lane intersection; and a 98% fair-share contribution towards the construction of either a roundabout or stop sign control at the Via Castilla Street/Masters Drive intersection.

4.16.6.3C	Prior to the issuance of the first building permit, the master developer shall post bonds for the full amount of the total estimated cost of the I-15/Cajalco Road Interchange Improvement project.
4.16.6.4A	Prior to the issuance of the first building permit after Phase 1, the master developer shall make a fair share contribution towards the improvements identified below as mitigation measures for year 2035 plus project conditions. • Masters Drive/Bennett Avenue: 32% of the cost to install a traffic signal. • Bedford Canyon Road/Georgetown Road: 100% of the cost to install a traffic signal. • I-15 Southbound Ramps/El Cerrito Road: 58% of the cost to add an eastbound right-turn lane. • Temescal Canyon Road/Cajalco Road: 91% of the cost to add a second southbound left-turn lane, a second eastbound through lane, and a westbound right-turn lane. • Street "C"/Eagle Glen Parkway: 100% of the cost to add a traffic signal.

This Page Intentionally Left Blank

3.4.17 Utilities and Service Systems

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒

Impacts	Would the Modified Project result in new or more severe impacts requiring revisions to the Prior EIR?	Would the Modified Project be implemented under changed circumstances resulting in new or more severe impacts requiring revisions to the Prior EIR?	Is there new information that would result in new or more severe impacts from the Modified Project requiring revisions to the Prior EIR?	Would the Modified Project result in eliminated, reduced, or no changes to impacts and no changes to the Prior EIR are required?
Would the project:				
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with Federal, State, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

Summary of Impacts Identified in Prior EIR

a) Exceed wastewater treatment requirements

The Prior EIR noted wastewater from the Approved Project would be treated at City Water Reclamation Facility (WRF) No. 2, and the City had planned upgrades to increase capacity at the facility to accommodate anticipated growth. The Prior EIR found the Approved Project would contribute to the need for expanded sewer facilities. The Prior EIR concluded impacts from the Approved Project would be mitigated to less than significant with implementation of Mitigation Measures 4.17.6.1A and 4.17.6.1B. The Prior EIR also noted the master project developer would pay a fair-share fee of

approximately 40 percent of the cost for the sewer system upgrade determined necessary to serve the Approved Project as stipulated in the Development Agreement between the City and the Approved Project master developer.

b) New or expanded water or wastewater treatment facilities

Water. The Prior EIR found imported water and its treatment were not proposed to expand significantly, due to use of available local groundwater supplies as managed by the City's Groundwater Management Plan (GWMP). The Water Supply Assessment (WSA) for the Approved Project noted groundwater is considered a reliable supply source that is not significantly affected by short-term droughts, as groundwater basins replenish in years with excess rainfall to supply water in drought years. During extended drought periods, groundwater elevations may fall, as the basins do not receive replenishment for an extended period of time. The Prior EIR found the GWMP identifies measures to decrease its reliance on imported water by utilizing groundwater and managing groundwater supplies by implementing sustainable groundwater management strategies in the GWMP. The Prior EIR noted the Approved Project would implement the same groundwater management strategies resulting in a less than significant impact with no mitigation required.

Wastewater. As noted previously, the Prior EIR concluded the Approved Project's impacts associated with wastewater treatment facilities would be mitigated to less than significant with implementation of Mitigation Measures 4.17.6.1A and 4.17.6.1B and the master project developer would pay a fair-share fee of approximately 40 percent of the cost for sewer system upgrades to WRF No. 2 as part of a Development Agreement.

c) New or expanded storm water drainage facilities

The Prior EIR noted stormwater flows from the Approved Project would be adequately detained and handled by a system of drainage facilities and detention basins to mitigate increased peak flows and mitigate how fast the increased volume would be released into the natural streambed. The Prior EIR noted the system included underground drainage facilities below streets construction within the AHSP, an open channel along the north side of the AHSP, a regional detention/water quality basin located in PA 12 and a local detention/water quality basin located in PA 14. The basins would detain storm water flows before outletting into Bedford Canyon Wash. The Prior EIR noted the basins would be designed to treat water quality pollutants prior to discharging waters into Bedford Canyon Wash.

The Prior EIR also assessed the impacts as well as the benefits from the planned widening, stabilization and restoration of Bedford Canyon Wash included as part of the Approved Project. The improvement project was developed to maintain and restore the natural channel in such a manner to minimize erosion to the existing bluff and perpetuating the sediment transport capabilities of the natural wash. The Prior

EIR noted each of the three design options would safely convey 100-year storm events and would achieve the following general hydraulic objectives:

- Accommodate the 100-year storm event for Bedford Canyon Wash in a burned and bulked condition with sufficient additional freeboard above design flow elevations.
- Protect the existing bluff on the east side of Bedford Canyon Wash from erosive velocities by either placing high velocity storm flows in a bypass channel or protecting the bluff with buried riprap.
- Lower the elevation of storm flows in either the bypass channel or Bedford Canyon Wash to an elevation below proposed Street "B" and adjoining residential building pads.
- Discharge storm flows at the downstream (northern) property line in a manner consistent with existing flows, including peak volumes, velocities, and debris conveyance.

The Prior EIR noted design of the Approved Project included storm water and water quality facilities and prescribed Mitigation Measure 4.9.6.2A requiring approval of a final WQMP that would result in less than significant impacts associated with altering existing drainage patterns, producing erosion and siltation, and exceeding the capacity of the storm water drainage system.

d) Adequate water supplies

The Prior EIR noted the City's primary water source is groundwater from the Temescal, Bedford, and Coldwater groundwater sub-basins. The secondary source is water imported by the Metropolitan Water District of Southern California (MWDSC) from the Colorado River and the State Water Project (SWP). The MWDSC provides wholesale water to Western Municipal Water District (WMWD) who in turn sells water to the City.

The Prior EIR noted the City's Groundwater Management Plan (GWMP) developed strategies for more sustainable management and use of groundwater resources to meet future water demands in recognition of decreasing groundwater levels in regional groundwater basins. The GWMP recommended these strategies be implemented through 2020 to reduce demands for imported water and to meet projected demands. The City shares one or more of the three groundwater sub-basins with the City of Norco, Home Gardens County Water District, Lee Lake Water District (LLWD), and Elsinore Valley Municipal Water District (EVMWD). LLWD participated in the GWMP and proposed a groundwater recharge project with recycled water in the Bedford Sub-basin.

The Prior EIR acknowledged the serious water supply issues facing California and noted Governor Brown's 2015 declared State of Emergency due to drought conditions. The Prior EIR noted the City would rely solely on groundwater supplies to meet existing and future water demands in the event of a prolonged drought resulted in curtailed water supply deliveries from MWDSC. The Prior EIR analyzed

the Approved Project's effect on groundwater supplies should the City be forced to rely solely on groundwater to supply City water demand during a prolonged drought.

The Prior EIR noted the City's 2010 Urban Water Management Plan (UWMP) identified the availability of sufficient water supplies to meet future water demand in the City's service area including the additional water demand from the Approved Project in year 2030 under normal, single-dry and multiple-dry water years. The Prior EIR found the City had sufficient groundwater rights to extract the necessary water to serve the Approved Project, and noted additional groundwater supplies could be utilized to meet demand if necessary. The Prior EIR prescribed Mitigation Measures 4.9.6.3A and 4.9.6.3B requiring a project level water conservation plan and water conservation educational program, reducing impacts from the Approved Project on groundwater supplies to a less than significant level.

e) Adequate wastewater treatment capacity

As noted previously, the Prior EIR concluded the Approved Project's impacts associated with wastewater treatment facilities would be mitigated to less than significant with implementation of Mitigation Measures 4.17.6.1A and 4.17.6.1B and the master project developer would pay a fair-share fee of approximately 40 percent of the cost for sewer system upgrades to WRF No. 2 as part of a Development Agreement.

f) Adequate landfill capacity

The Prior EIR noted solid waste generated by the Approved Project would by hauled away by WMI and transported to the El Sobrante Landfill, located south of the City. The Prior EIR found adequate capacity existed at the receiving landfill, and the Approved Project would not significantly affect operations or the expected lifetime of the landfill. Therefore, the Prior EIR found no significant solid waste disposal impacts would occur as a result of the Approved Project.

g) Solid waste regulations

The Prior EIR noted all uses within the City that generate waste are required to coordinate with a waste hauler to develop collection of recyclable materials for the project on a common schedule as set forth in applicable local, regional, and State programs. Additionally, the Prior EIR noted all development within the City is required to comply with applicable elements of AB 1327, Chapter 18 (California Solid Waste Reuse and Recycling Access Act of 1991) and other applicable local, State, and Federal solid waste disposal standards, thereby ensuring that the solid waste stream to the El Sobrante Sanitary Landfill was reduced and no hazardous waste was received in accordance with existing regulations. The Prior EIR concluded the Approved Project would comply with applicable solid waste regulations resulting in a less than significant impact and no mitigation was required.

Impacts Associated with the Modified Project

(a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Prior EIR noted wastewater from the Approved Project would be treated at City Water Reclamation Facility (WRF) No. 2, and the City had planned upgrades to increase capacity at the facility to accommodate anticipated growth. The Prior EIR also noted the master project developer would pay a fair-share fee of approximately 40 percent of the cost for the sewer system upgrade determined necessary to serve the Approved Project as stipulated in the Development Agreement between the City and the Approved Project master developer. The incremental increase in wastewater generated by the Modified Project represents a small percentage of the total treatment capacity at WRF No. 2 and would not cause a new impact. Furthermore, a *Sewer System Hydraulic Analysis Bedford Marketplace* was prepared by Hunsaker & Associates (Appendix J to SEIR No. 2), which analyzed the capacity of the sewer system to accommodate the additional wastewater generated by the Modified Project. The study determined the proposed sewer lines and existing 12-inch sewer main within Bedford Canyon Road have sufficient capacity to accommodate the Modified Project. Therefore, no new or substantially greater impacts would occur with implementation of the Modified Project when compared to those identified in the Prior EIR. The Modified Project's impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

(b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required.

Water. The Prior EIR found the Approved Project would not have a significant impact on water supplies based on the conclusions of a Water Supply Assessment (WSA). A *Water Supply Assessment Update* was prepared for the Modified Project (Fuscoe, October 17, 2019), included in Appendix G-2 to SEIR No. 2, to analyze whether the additional commercial and hotel development associated with the Modified Project created a new impact on water supply. The WSA determined the Modified Project would increase water demand approximately 6.6 acre feet per year (AFY), which would increase the demand for the AHSP from 795.6 AFY to 802.2 AFY. Compared to the 2015 Urban Water Management Plan, the increased total water demand of 802.2 AFY would not result in a deficit in any planning scenario and the City would continue to have a water surplus.

Wastewater. As noted previously, the Prior EIR concluded the Approved Project's impacts associated with wastewater treatment facilities would be mitigated to less than significant with implementation of Mitigation Measures 4.17.6.1A and 4.17.6.1B and the master project developer would pay a fair-share

fee of approximately 40 percent of the cost for sewer system upgrades to WRF No. 2 as part of a Development Agreement. The incremental increase in wastewater generated by the Modified Project represents a small percentage of the total treatment capacity at the City Water Reclamation Facility No. 2 and would not cause a new impact.

Therefore, no new or substantially greater impacts would occur with implementation of the Modified Project when compared to those identified in the Prior EIR. The Modified Project's impacts are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

(c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Bedford Marketplace commercial center has two drainage areas. The 10-acre portion originally included in PA 11 of the AHSP will continue to drain to an existing water quality/detention basin located in AHSP PA 12. This basin currently outlets into Bedford Canyon Wash and no new facilities are required and no impacts would occur. The Modified Project Site will drain to a new water quality/detention basin located in PA 12A. The construction of this basin has been analyzed in SEIR No. 2 as part of the overall development footprint and no impacts would occur. The basin within PA 12A will also outlet in Bedford Canyon Wash. A new outlet structure will be constructed as part of the Modified Project. The outlet structure has been located within the existing rip-rap lined banks and on the existing concrete pad crossing Bedford Canyon Wash. Therefore, the outlet structure will not impact the soft bottom portion of Bedford Canyon Wash and will not cause new biological impacts as analyzed in Section 3.4.4.

Therefore, no new or substantially greater impacts would occur with implementation of the Modified Project when compared to those identified in the Prior EIR. The Modified Project's impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

(d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required.

The original WSA for the Approved Project was based on data and information from the 2010 UWMP. Since approval of the original WSA, the City has updated and approved the 2015 UWMP. For this

reason, the 2019 WSA compares the additional water demands associated with the Modified Project with the findings from the updated 2015 UWMP as well as the 2015 UWMP.

The 2019 WSA includes a comparison of the differences for the Multiple Dry Year (MDY) scenarios contained in the 2010 and 2015 UWMPs. The WSA notes this comparison represents the worst-case scenario, as opposed to the Normal Dry Year (NDY) and Single Dry Year (SDY) scenarios also included in the UWMPs. The MDY from the 2010 UWMP projects a surplus of 6,289 AFY in 2015 increasing to 9,236 AFY from 2015-2035. The MDY from the 2015 UWMP projects a surplus of 5,933 AFY in 2020 decreasing to 2,535 AFY from 2020-2040. The 2019 WSA finds the City has a surplus of water available in the MDY scenarios summarized in the 2010 and 2015 UWMPs.

With the 802.2 AFY water demand from the AHSP as revised by the Modified Project are included in the capacity/surplus calculations from the 2015 UWMP, the Modified Project did not result in a deficit in any scenario. The 2019 WSA water demand calculations for each climate scenario from the 2015 UWMP projections minus the AHSP new water demand are a minimum surplus of 1,733 AFY in 2040 in the MDY scenario, representing the worst case scenario.

The water demands from the Modified Project do not alter the conclusion of the original WSA. The 2019 WSA determined water supplies are available to meet water demands from the revised AHSP in multiple climate scenarios (i.e. Normal, Single Dry, or Multiple Dry Years). The 2019 WSA concluded there are adequate water supplies to serve the Modified Project's anticipated water demand increases as well as other demands within the City's jurisdiction.

Mitigation Measures 4.9.6.3A and 4.9.6.3B from the Prior EIR requiring a project level water conservation plan and water conservation educational program are applicable to the Modified Project. The Modified Project's impacts regarding groundwater depletion are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

(e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. As noted previously, the Prior EIR concluded the Approved Project's impacts associated with wastewater treatment facilities would be mitigated to less than significant with implementation of Mitigation Measures 4.17.6.1A and 4.17.6.1B and the master project developer would pay a fair-share fee of approximately 40 percent of the cost for sewer system upgrades to WRF No. 2 as part of a Development Agreement. The incremental increase in wastewater generated by the Modified Project represents a small percentage of the total treatment capacity at the City Water Reclamation Facility No.

2 and would not cause a new impact. The Modified Project's impacts regarding wastewater treatment are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

(f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Prior EIR noted solid waste generated by the Approved Project would by hauled away by WMI and transported to the El Sobrante Landfill, located south of the City. The Prior EIR found adequate capacity existed at the receiving landfill, and the Approved Project would not significantly affect operations or the expected lifetime of the landfill. The incremental increase in solid waste generated by the Modified Project represents a small percentage of the total capacity at the El Sobrante Landfill and would not cause a change in the conclusion that sufficient capacity exists. The Modified Project's impacts regarding solid waste disposal are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

(g) Comply with federal, state, and local statutes and regulations related to solid waste?

Eliminated, Reduced, or No Changes to Impacts and No Changes to the Prior EIR are Required. The Prior EIR noted all uses within the City that generate waste are required to coordinate with a waste hauler to develop collection of recyclable materials for the project on a common schedule as set forth in applicable local, regional, and State programs. Additionally, the Prior EIR noted all development within the City is required to comply with applicable elements of AB 1327, Chapter 18 (California Solid Waste Reuse and Recycling Access Act of 1991) and other applicable local, State, and Federal solid waste disposal standards, thereby ensuring that the solid waste stream to the El Sobrante Sanitary Landfill was reduced and no hazardous waste was received in accordance with existing regulations. The Modified Project would not change the requirements to comply with local, State, and Federal regulations, or the requirement to coordinate with the waste hauler. The Prior EIR concluded the Approved Project would comply with applicable solid waste regulations resulting in a less than significant impact and no mitigation was required. The Modified Project's impacts regarding solid waste disposal are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant) remains unchanged. This topic will not be evaluated further in this SEIR.

Cumulative Impacts Associated with the Proposed Project

Less Than Significant Impact/No Changes or No New Information Requiring Preparation of an EIR. The Modified Project would not generate a substantial increase in wastewater, drainage, water and solid waste services relative to the Approved Project analyzed in the Prior EIR. Therefore, the

Modified Project's level of cumulative impact to these utilities would not differ from the less than significant impact conclusion in the Prior EIR. The Modified Project's cumulative impacts associated with utilities are consistent with the impacts identified in the Prior EIR and the level of impact (less than significant with mitigation) remains unchanged. This topic will not be evaluated further in this SEIR.

Mitigation Measures Identified in Prior EIR and Applicable to Modified Project

The following mitigation measures from the Prior EIR were found to be applicable to the Modified Project:

Utilities and Service Systems	
4.17.6.1A	Prior to the issuance of grading permits for any development phase that would occur under the Specific Plan, the project proponent shall obtain verification from the City that planned wastewater capacity improvements at WRF2 or elsewhere in the city's wastewater system are in place and operational or said improvements are funded or under construction and will be available for service to completed homes and businesses.
4.17.6.1B	The City shall implement the mitigation and monitoring plan identified in the EIR for Wastewater Treatment Plant No. 2 as a part of any expansion of said plant. Alternatively, the Developer shall negotiate an advanced funding option for implementation of the mitigation and monitoring plan identified in the EIR for Wastewater Treatment Plant No. 2 in lieu of paying a Sewer Connection Fee for sewer capacity to ensure that wastewater plant capacity is available so phases of the project may proceed without being delayed. Sediment discharges from the site may be controlled by the following: sandbags, silt fences, straw wattles and temporary debris basins (if deemed necessary), and other discharge control devices. The construction and condition of the BMPs would be periodically inspected during construction, and repairs would be made when necessary as required by the SWPPP.

4.0 UPDATED MITIGATION MONITORING AND REPORTING PROGRAM

This Mitigation Monitoring and Reporting Program (MMRP) was originally formulated based on the findings of the certified Environmental Impact Report (Certified EIR) for the Arantine Hills Specific Plan, State Clearinghouse No. 2006091093, approved in 2012. This MMRP has been updated with changes to mitigation measures included in SEIR No. 1 approved in 2016, an EIR Addendum approved in 2018, and SEIR No. 2. This MMRP is in compliance with Section 15097 of the CEQA Guidelines, which requires that the Lead Agency "adopt a program for monitoring or reporting on the revisions which it has required in the project and the measures it has imposed to mitigate or avoid significant environmental effects."

This Page Intentionally Left Blank

UPDATED MITIGATION MONITORING AND REPORTING PROGRAM CHECKLIST

Project File Name: Arantine Hills Specific Plan Amendment **Applicant: Bedford Marketplace, LLC**

Date: February 2020

Mitigation Measure No. / Implementing Action	Responsible for Monitoring	Monitoring Frequency	Timing of Verification	Method of Verification	Verified Date/ Initials	Sanctions for Non-Compliance
AIR QUALITY						
4.3.6.1A: Prior to the issuance of a grading permit, the project developer shall require by contract specifications that contractors shall place construction equipment staging areas at least 200 feet away from sensitive receptors. Contract specifications shall be included in the project Specific Plan construction documents, which shall be reviewed by the City.	City of Corona Public Works Building and Safety Planning Division	Prior to Grading and during grading and construction operations.	Prior to Issuance of Grading Permit	Review of construction documents and on-site inspection.		Withhold Grading Permit and/or Issuance of a Stop Work Order
4.3.6.1B: Prior to the issuance of a grading permit, the project developer shall require by contract specifications that contractors shall utilize power sources (e.g., power poles) or clean-fuel generators. Contract specifications should be included in the Specific Plan construction documents, which shall be reviewed by the City.	City of Corona Public Works Building and Safety Planning Division	Prior to Grading and during grading and construction operations.	Prior to Issuance of Grading Permit	Review of construction documents and on-site inspection.		Withhold Grading Permit and/or Issuance of a Stop Work Order
4.3.6.1C: Prior to the issuance of a grading permit, the project developer shall require contract specifications that contractors shall utilize California Air Resources Board (CARB) Tier II Certified equipment or better during the rough/mass grading phase for the following pieces of	City of Corona Public Works Building and Safety	Prior to Grading and during grading and construction operations.	Prior to Issuance of Grading Permit	Review of construction documents and		Withhold Grading Permit and/or Issuance

equipment: rubber-tired dozers and scrapers. Contract specifications shall be included in the Specific Plan construction documents, which shall be reviewed by the City.	Planning Division			on-site inspection.		of a Stop Work Order
4.3.6.1D: Prior to issuance of building permits, the project applicant shall provide evidence to the City that his contractor uses 2010 and newer diesel haul trucks (e.g., material delivery trucks and soil import/export) to the extent feasible. If the project applicant and his contractor determine that 2010 model year or newer diesel trucks cannot be obtained, the project applicant shall notify the City that trucks with EPA 2007 model year NO_x emissions shall be utilized.	City of Corona Building and Safety Planning Division	Prior to Grading and during grading and construction operations.	Prior to Issuance of Grading Permit	Review of construction documents and on-site inspection.		Withhold Grading Permit and/or Issuance of a Stop Work Order
4.3.6.1E: Prior to issuance of building permits, the project applicant shall provide evidence to the City that his contractor use on-site construction equipment that meet EPA Tier 3 or higher emissions standards according to the following schedule: • Post-January 1, 2015: All off-road diesel-powered construction equipment greater than 50 hp shall meet the Tier 4 emission standards, where available. In addition, all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations. • A copy of each unit's certified tier specification, BACT documentation, and CARB or SCAQMD	City of Corona Building and Safety Planning Division	Prior to Grading and during grading and construction operations.	Prior to Issuance of Grading Permit	Review of construction documents and on-site inspection.		Withhold Grading Permit and/or Issuance of a Stop Work Order

operating permit shall be provided at the time of mobilization of each applicable unit of equipment.						
4.3.6.1F: The City shall encourage construction contractors to apply for SCAQMD "SOON" funds by advising project applicants and their contractors of this programs availability. Information on this program can be found at the following website: http://www.aqmd.gov/home/programs/business/business-detail?title=off-road-diesel-engines&parent=vehicle-engine-upgrades.	The City of Corona Building and Safety Planning Division	Prior to site grading.	Prior to issuance of a grading permit	The City shall provide the applicant and the construction contractor(s) the relevant information.		Withhold Grading Permit
4.3.6.3A: Prior to the issuance of each building permit, the project applicant shall require by contract specifications that architectural coatings require the use of either HVLP spraying equipment or manual application techniques to apply architectural coatings. Contract specifications shall be included in the Specific Plan construction documents, which shall be reviewed by the City.	City of Corona Building and Safety	Prior to Construction (once)	Prior to issuance of Building Permit	Review of construction documents and on-site inspection		Withhold Building Permit and/or Issuance of a Stop Work Order
4.3.6.4A: Prior to issuance of each building permit associated with the Specific Plan, building and site plan designs shall ensure that the project's energy efficiencies surpass applicable 2008 California Title 24, Part 6 Energy Efficiency Standards by a minimum of 20 percent. Verification of increased energy efficiencies shall be documented in Title 24 Compliance Reports provided by the Applicant, and reviewed and approved by the City. Any combination of the following design features may be used to fulfill this requirement provided that the total increase in energy efficiency meets or exceeds 20 percent:	City of Corona Building and Safety Planning Division	Prior to Construction (once)	Prior to Issuance of Building Permits	Review of building plans and on-site inspection		Withhold Building Permits

• Exceed 2008 California Title 24 Energy Efficiency performance standards for water heating and space heating and cooling. • Increase in insulation such that heat transfer and thermal bridging is minimized. • Limit air leakage through the structure or within the heating and cooling distribution system to minimize energy consumption. • Incorporate dual-paned or other energy efficient windows. • Incorporate energy efficient space heating and cooling equipment. • Install interior and exterior energy efficient lighting which exceeds the 2008 California Title 24 Energy Efficiency performance standards including but not limited to automatic devices to turn off lights when they are not needed. • To the extent that they are compatible with landscaping guidelines established by the City, include shade-producing trees, particularly those that shade paved surfaces such as streets and parking lots and buildings, within the project site. • Use light and off-white colors in the paint and surface color palette for project buildings to reflect heat away. • All buildings shall be designed to accommodate renewable energy sources, such as photovoltaic solar electricity systems, appropriate to their architectural design.						
4.3.6.4B: Prior to issuance of each building permit associated with the Specific Plan, the following design features shall be implemented to reduce energy demand associated with potable water conveyance: • Landscaping palette emphasizing drought-tolerant plants;	City of Corona Building and Safety Planning Division	Prior to Construction (once)	Prior to Issuance of Building Permits and Final Site Plan Approval	Review of final site plan and building plans and on-site inspection.		Withhold Building Permits

• Use of water-efficient irrigation techniques; and • U.S. EPA Certified WaterSense labeled ~~f~~or equivalent faucets, high-efficiency toilets (HETs), and water-conserving shower heads.						
4.3.6.4E: The developer shall provide electric car charging infrastructure for multi-family residential and commercial land uses.	City of Corona Building and Safety Planning Division	Prior to Construction (once)	Prior to Issuance of Building Permits and Final Site Plan Approval	Review of final site plan and building plans and on-site inspection.		Withhold Building Permits
4.3.6.1H: The developer(s) within the multi-family and single family developments shall provide outside electric outlets and natural gas stub outs.	City of Corona Building and Safety Planning Division	Prior to Construction (once)	Prior to Issuance of Building Permits and Final Site Plan Approval	Review of final site plan and building plans and on-site inspection.		Withhold Building Permits
4.3.6.1I: When using construction equipment greater than 150 horsepower (>150 HP) during soil import/hauling activity, the Construction Contractor shall ensure that off-road diesel construction equipment complies with Environmental Protection Agency (EPA)/California Air Resources Board (CARB) Tier 4 emission standards or equivalent and shall ensure that all construction equipment is turned and maintained in accordance with the manufacturer's specifications.	City of Corona Building and Safety Planning Division	Prior to Grading and during grading and construction operations.	Prior to Issuance of Grading Permit	Review of construction documents and on-site inspection.		Withhold Grading Permit and/or Issuance of a Stop Work Order

BIOLOGICAL RESOURCES						
4.4.5.1A: If grading and construction activities begin during the California gnatcatcher breeding season (February 15 through August 30), a qualified biologist shall survey all potential nesting vegetation within and adjacent to the site for nesting birds, prior to commencing vegetation removal. Surveys shall be conducted at the appropriate time of day. If no nesting birds were observed, project activities may begin. If an active bird nest is located, the nest site shall be fenced a minimum of 500 feet in all directions, and this area shall not be disturbed until after the nest becomes inactive, the young have fledged, the young are no longer being fed by the parents, the young have left the area, or the young will no longer be impacted by the activities. Alternatively, a qualified biologist may determine that construction can be permitted within the buffer areas provided the qualified biologist develops a monitoring plan to prevent any impacts while the nest continues to be active (eggs, chicks, etc.). This monitoring plan will be submitted to the City of Corona for approval prior to work within the buffer.	City of Corona Planning Division	Prior to Grading	Prior to Issuance of Grading Permit	Submittal of Evidence that the pre-construction survey has been completed.		Withhold Grading Permit
4.4.5.2A: Pre-construction presence/absence surveys for burrowing owl within the survey area where suitable habitat is present shall be conducted by a qualified biologist (as determined by the City of Corona) within 30 days prior to the commencement of ground disturbing activities. If active burrowing owl burrows are detected during the breeding season, all work within 300 feet of any active burrow will be halted until that nesting effort is finished. The on-site biologist will review and verify compliance with these boundaries and will verify the nesting effort has	City of Corona Planning Division	Prior to grading	Prior to Issuance of Grading Permit	Submittal of Evidence that a qualified biologist has been hired and the pre-construction survey has been completed.		Withhold Grading Permit

finished. Work can resume when no other active burrowing owl burrows are found. If active burrowing owl burrows are detected outside the breeding season, then passive and/or active relocation may be approved following consultation with CDFW and/or USFWS. If owls are found to be present on site, the CDFW should be notified within three days of the detection of occupied burrows, and a project burrowing owl conservation strategy should be developed in cooperation with the CDFW, USFWS, and the Western Riverside County Regional Conservation Authority. One-way doors may be installed as part of a passive relocation program. Burrowing owl burrows shall be excavated with hand tools by a qualified biologist when determined to be unoccupied, and backfilled to ensure that animals do not reenter the holes/dens. Upon completion of the survey and any follow-up construction avoidance management, a report shall be prepared and submitted to the City for mitigation monitoring compliance record keeping.				Submittal of a report of the survey findings to the City. If active burrows are detected provide evidence to the City that the passive relocation plan has been approved by CDFW and USFWS.		
4.4.5.2B: A Biological Monitor shall be onsite during the initial ground disturbances to identify and locate any red-diamond rattlesnake within the PAs 11 and 12A. Should any red-diamond rattlesnake species be located within the Project site, construction and earthwork within the immediate area of the identified species shall cease to allow for the species to vacate or be relocated from the area safely. Work can resume when the species has vacated the immediate ground disturbances work area. To reduce harm to the red-diamond rattlesnake and other species in the areas being disturbed, the following best management practices shall be added to the soil import and grading plans:	City of Corona Planning Division	Prior to site grubbing or grading	Prior to Issuance of Grading Permit	Submittal of evidence that a qualified biologist has been hired and the pre-construction survey has been completed. Submittal of a report of the		Withhold Grading Permit

• Work area limits will be defined and respected. All grading areas will have their boundaries clearly flagged or marked before Project implementation and all disturbances will be confined to the flagged areas. All key Project personnel will be instructed that their activities must be confined to locations within the flagged areas. Disturbance beyond the actual grading zone is prohibited without site-specific surveys. • Cleared or trimmed non-native, exotic vegetation, and woody debris will be disposed of in a legal manner at an approved disposal site. • Employees, contractors, and site visitors will be prohibited from collecting plants and wildlife. • Water pollution and erosion control plans will be developed and implemented in accordance with SWPPP requirements. • Access to construction sites will be via preexisting access routes. • Construction equipment will be properly maintained; construction employees and contractors will be trained on proper implementation and monitoring of BMPs; and procedures will be implemented to minimize the likelihood of hazardous spills and to control sediment-laden runoff. • Effective perimeter control BMPs to control discharge of pollutants from the Project site during construction. • All temporary construction-related night lighting used in onsite development areas will be shielded and/or directed downward to avoid indirect impacts to nocturnal wildlife such that night lighting could increase predation rates. • All construction contractors, subcontractors, and employees will comply with the litter and pollution				survey findings to the City.		

laws and will institute a litter control/removal program during the course of construction activities to reduce the attractiveness of the area to opportunistic predators such as coyotes, opossums, and common ravens. • Active nests (nests with chicks or eggs) cannot be removed or disturbed. Nests may be removed or disturbed by a qualified biologist, if not active. The removal of potential nesting bird habitat will be conducted outside of the nesting season (February 15 to September 15~~August 31~~) to the extent feasible. If grading or site disturbance is to occur between February 15 and Aug September 15~~August 31~~, a nesting bird survey shall be conducted by a qualified biologist ~~(as determined by the City of Corona)~~ within no more than five days~~72 hours~~ of scheduled vegetation removal, to determine the presence of nests or nesting birds. If active nests are identified, the biologist will establish buffers around the vegetation (500 feet for raptors and sensitive species, 200 feet for non-raptors/non-sensitive species). All work within these buffers will be halted until the nesting effort is finished (i.e. the juveniles are surviving independent from the nest). The on-site biologist will review and verify compliance with these nesting boundaries and will verify the nesting effort has finished. Work can resume when no other active nests are found. Alternatively, a qualified biologist may determine that construction can be permitted within the buffer areas and would develop a monitoring plan to prevent any impacts while the nest continues to be active (eggs, chicks, etc.). Upon completion of the survey and any follow-up construction avoidance management, a report shall be prepared and submitted to the CDFW~~City~~ for mitigation monitoring compliance record keeping. If vegetation clearing is not completed within five days~~72 hours~~ of a						

negative survey, the nesting survey must be repeated to confirm the absence of nesting birds.						
4.4.5.3A: Prior to the issuance of grading permits for the affected jurisdictional areas, the project applicant shall provide evidence to the City that a Section 404 Permit from the USACE, a Section 401 Permit from the RWQCB, and a Section 1602 Streambed Alteration Agreement from the CDFW have been obtained for impacts to jurisdictional waters in the project site.	City of Corona Planning Division	Prior to grubbing and grading	Prior to Issuance of Grading Permit	Provide evidence to the City that the 404 Permit, 401 Permit and Section 1602 Agreement have been obtained.		Withhold Grading Permit
4.4.5.3B: Prior to the issuance of grading permits for the affected jurisdictional areas, a Determination of Biological Superior or Equivalent Preservation (DBESP) shall be submitted to the Riverside Conservation Authority (RCA) identifying potential impacts to riparian/riverine areas, discussing why avoidance of impacts to riparian/riverine areas was not feasible, and identifying compensation for the loss of riparian/riverine areas.	City of Corona Planning Division	Prior to grubbing and grading	Prior to Issuance of Grading Permit	Provide evidence the DBESP has been submitted to the RCA and mitigation in the DBESP is approved by the RCA and City.		Withhold Grading Permit
4.4.5.3C: The Applicant shall mitigate for the permanent loss of USACE and CDFW jurisdictional and MSHCP riparian/riverine resources on site at a 2:1 ratio. Mitigation may occur on-site within Bedford Canyon Wash or one of its tributaries; mitigation may occur through applicant-sponsored mitigation at an off-site location within the MSHCP boundaries: or mitigation may occur through purchase of credits at an approved mitigation bank or in-lieu	City of Corona Planning Division	Prior to grubbing and grading	Prior to Issuance of Grading Permit	Provide evidence to the City or participation in a mitigation bank or in-lieu fee program has been		Withhold Grading Permit

fee program such as the Santa Ana Watershed Association (SAWA) In-Lieu Fee Wetland Creation Program or equivalent, if available.				secured by the applicant.		
4.4.5.3D Following the completion of grading, all of USACE and CDFW jurisdictional areas that will be temporarily impacted shall be restored using native vegetation.	City of Corona Planning Division	Onsite inspection after grading	After onsite grading.	Onsite inspection.		Withhold Occupancy permits and/or Issuance of a Stop Work Order.
4.4.5.3E: For Bedford Canyon Wash design options 2 and 3, it is anticipated that periodic maintenance may be necessary within the soft bottom channel/Bedford Canyon Wash, such as trash and invasive species removal; riprap and grade control structure repair; therefore, an Operations and Maintenance Manual or Long Term Management Plan shall be prepared, subject to the approval of the Resource Agencies, which will identify the appropriate methods and timing regarding the maintenance of the restored wash.	City of Corona Planning Division Riverside County Flood Control and Water Conservation District	Prior to Grading	Prior to Issuance of Grading Permits for the affected jurisdictional areas	Submittal by applicant of Evidence that the Operations and Maintenance Manual has been approved by the Resource Agencies.		Withhold Grading Permit
CULTURAL RESOURCES						
4.5.6.1A: The applicant shall retain a qualified archaeological monitor who shall prepare an Archaeological Resources Mitigation Monitoring Plan in consultation with the Native American Tribe. The qualified archaeological monitor shall attend all pre-grading meetings to inform the grading and excavation contractors of the archaeological resources mitigation program and shall instruct them with respect to its implementation. The qualified archaeological	City of Corona Planning Division	Prior to grading and on-going during ground disturbing activities.	Prior to Issuance of Grading Permit	Provide evidence to the City that a qualified archeologist(s) monitor has been retained, and that the		Withhold Grading Permit and/or Issuance of a Stop Work Order

monitor shall be on site at all times during the initial phases of clearing and rough grading in the Modified Project Site (PAs 11 and 12A) and Approved Project (PA 14) if Soil Import Alternative 2 is implemented to inspect cuts for archaeological and cultural resources. If such resources are discovered~~,~~ and are in danger of loss and/or destruction, the qualified archaeological monitor shall recover them. In instances where recovery requires an extended salvage time, the qualified archaeological monitor shall be allowed to temporarily direct, divert or halt grading to allow recovery of resource(s) in a timely manner. Recovered archaeological resources, along with copies of pertinent field notes, photographs, and maps, shall be deposited in a certified curation facility that meets the standards of the California Office of Historic Preservation. The resources shall be recorded in the California Archaeological Inventory Database. All sacred sites, should they be encountered within the project area, shall be avoided and preserved as the preferred mitigation, if feasible. A final monitoring report shall be submitted to the City within 30 days of the end of monitoring activities.				monitor will be present during all grading and other significant ground-disturbing. A report of findings shall be submitted to the City 30 days of the end of monitoring activities.		
4.5.6.1B: All grading, excavation, and ground-breaking activities shall be monitored by a qualified tribal monitor(s). The project applicant shall pay all fees associated with such tribal monitors(s) and shall contact the Native American Tribe at least 30 days before pulling grading permits from the City. In the event of the discovery of Native American burial(s), the qualified tribal monitor(s) will have the authority to temporarily stop and redirect grading activities, in consensus with the archaeological monitor. The tribal monitor(s) shall attend all pre-grading meetings to assist the archaeological monitor with informing the grading and	City of Corona Planning Division	Prior to grading, excavation, and ground-breaking activities.	Prior to Issuance of Grading Permit	Provide evidence to the City that a tribal monitor or fees have been paid to the City to retain a tribal monitor has been retained, and that the		Withhold Grading Permit and/or Issuance of a Stop Work Order

excavation contractors of the archaeological resources mitigation program and instruct them with respect to its implementation. The qualified tribal monitor shall be on site at all times during clearing and rough grading to inspect cuts for archaeological and cultural resources.				monitor will be present during all grading and other significant ground-disturbing.		
4.5.6.1C: The developer shall enter into a Treatment and Disposition Agreement with the appropriate Native American Tribe prior to the issuance of a grading permit. The Treatment and Disposition Agreement shall identify the treatment of cultural items (artifacts) and the treatment and the disposition of human remains.	City of Corona Planning Division	Prior to grading, excavation, and ground-breaking activities.	Prior to Issuance of Grading Permit	The developer shall submit to the City a copy of the Treatment and Disposition Agreement entered into between the developer and the Native American Tribe.		Withhold Grading Permit and/or Issuance of a Stop Work Order
4.5.6.1D: Unless otherwise required by law, the site of any reburial of Native American human remains or cultural artifacts shall not be disclosed and is not subject to public disclosure requirements of the California Public Records Act, pursuant to the specific exemption set forth in California Government Code Section 6254(r).	City of Corona Planning Division	On-going as necessary during grading and construction phase.	During grading and construction phase.	A written agreement is entered into by the City, developer and Coroner.		Issuance of a Stop Work Order.

4.5.6.2A: Prior to the issuance of grading permits, the project proponent shall submit to and receive approval from the City, a Paleontological Resource Impact Mitigation Program (PRIMP). The PRIMP shall include the provision of a trained paleontological monitor during on-site soil disturbance activities on the north and south sides ~~side~~ of Bedford Wash within the Modified Project site (revised PA 11 and new PA 12A~~PAs 16 and 17~~) and Approved Project (PA 14) if Soil Import Alternative 2 is implemented~~boundary~~. The monitoring for paleontological resources shall be conducted on a full-time basis during the rough-grading phases of the Modified Project site within native soils that have the potential to harbor paleontological resources.	City of Corona Planning Division	Prior to grading, excavation, and ground-breaking activities.	Prior to Issuance of Grading Permit	A Paleontological Resource Impact Mitigation Program (PRIMP) shall be submitted to the City for review and approval.		Withhold Grading Permit
4.5.6.2B: The paleontological monitor shall be equipped to rapidly remove any large fossil specimens encountered during excavation. During monitoring, samples of soil shall be collected and processed to recover micro-vertebrate fossils. Processing shall include wet screen washing and microscopic examination of the residual materials to identify small vertebrate remains.	City of Corona Planning Division	During grading, excavation, and ground-breaking activities.	During grading, excavation, and ground-breaking activities.	On-site inspection.		Issuance of a Stop Work Order.
4.5.6.2C: If paleontological resources are unearthed or discovered during excavation of the Specific Plan area, the following recovery processes shall apply: • Upon encountering a large deposit of bone, salvage of all bone in the area shall be conducted with additional field staff and in accordance with modern paleontological techniques. • All fossils collected during the project shall be prepared to a reasonable point of identification.	City of Corona Planning Division	During grading, excavation, and ground-breaking activities.	During grading, excavation, and ground-breaking activities.	On-site inspection.		Issuance of a Stop Work Order.

Excess sediment or matrix shall be removed from the specimens to reduce the bulk and cost of storage. Itemized catalogs of all material collected and identified shall be provided to the museum repository along with the specimens. • A report documenting the results of the monitoring and salvage activities and the significance of the fossils shall be prepared. • All fossils collected during this work, along with the itemized inventory of these specimens, shall be deposited in a museum repository (such as the Western Center for Archaeology & Paleontology, the Riverside Metropolitan Museum, or the San Bernardino County Museum) for permanent curation and storage.						
GEOLOGY AND SOILS						
4.6.6.1A: Prior to the grading of areas to receive structural fill or engineered structures, these areas should be cleared of surface obstructions and unsuitable material (such as undocumented fill, colluvium, and topsoil). Vegetation and debris should be removed and properly disposed of offsite. Holes resulting from the removal of buried obstructions, which extend below proposed removal bottoms, should be replaced with suitable compacted fill material. ~~Prior to the initiation of any on-site construction, the project contractor shall remove all loose, compressible alluvial and fill materials from areas to receive engineered compact fill. Actual depths of removal shall be verified during future site-specific preliminary soils investigations and ultimately~~	City of Corona Planning Division Public Works	During grading, excavation, and ground-breaking activities.	Prior to on-site construction.	Review of construction documents and on-site inspection.		Issuance of Stop Work Order.

~~during the grading operation by observation and in place density testing.~~						
4.6.6.1B: Onsite Soils/Unsuitable. All unsuitable and potentially compressible materials not removed by design cuts shall be excavated to competent materials and replaced with compacted fill soils. This includes all existing undocumented artificial fill, residual soil, and upper portions of the previously placed compacted fill within PA 11 and alluvial deposits. Specific procedures by soil type are summarized below. *Previously Placed Artificial Fill:* The previously placed compacted fill within PA 11 are considered suitable to support proposed structures and/or additional fill placement. The upper 1-foot of the previously placed fill soils shall be removed and replaced with compacted fill soils in order to remove any weathered or desiccated materials. *Alluvial Deposits:* Alluvial deposits are generally located within the Modified Project Site. The upper approximately 5 feet of the alluvial deposits is loose, weathered, and/or desiccated and shall be removed and replaced with compacted artificial fill soils. Removal depths are estimated to range between approximately 1 to 5 feet below existing grade. Localized areas of deeper removals should be anticipated during grading. Removal bottoms should be extended laterally in order to support a 1:1 (horizontal to vertical) projection away from proposed structures or improvements. The actual depths and lateral extents of removals will be determined by the geotechnical consultant	City of Corona Planning Division Building and Safety Engineering	During grading, excavation, and ground-breaking activities.	Prior to on-site construction.	Review of grading and construction documents and on-site inspection.		Issuance of Stop Work Order.

during grading based on the actual subsurface conditions encountered. Several methods shall be utilized in determining the suitability of the material observed in the removal bottom excavations. Observation of material, proof rolling, probing, and occasional field density testing of the removal bottoms shall be performed by a field technician and/or field geologist to verify removal bottom suitability. When field density test data is utilized for the approval of a removal bottom, an in-place relative compaction of 85 percent or greater and/or a degree of saturation of 85 percent or greater will be considered suitable. **Onsite Soils/Over-Excavation.** In order to provide a uniform fill blanket beneath proposed structures, design cut and cut/fill transition pads shall be over-excavated a minimum of 3 feet below ultimate finish pad grade based on the future rough grading design. A maximum 3:1 differential fill thickness underneath individual lots shall be maintained in order to reduce the potential for future differential settlement. Over-excavation shall extend laterally a minimum of 5 feet beyond proposed building footprints. Streets in design cut areas shall be over-excavated a minimum of 2 feet below design subgrade elevations. In addition, retaining wall footings located on cut or a cut/fill transition should be over-excavated a minimum of 2 feet below and 2 feet beyond the edges of the proposed footings. Utility excavations may be completed utilizing typical heavy machinery. The native soils at the site are generally uncemented alluvial soils (Class "C" per Cal OSHA) and are anticipated to be unstable when excavated vertically. At the						

owner's discretion the streets could be over-excavated, such that utility trenches will then be excavated through compacted fill soils. If desired, it is recommended that the street over-excavation extend approximately 2-foot below the lowest utility. Over-excavations/undercuts must be confirmed and mapped by the geotechnical consultant prior to subsequent fill placement. The actual depth and lateral extents of over-excavation should be determined by the geotechnical consultant during grading based on the actual subsurface conditions encountered. Estimated removals in the previously graded portin of PA 11 may extend deeper than the recommended over-excavation in order to remove unsuitable materials. **Removal Bottoms and Subgrade Preparation.** Removal bottoms, over-excavation bottoms, and areas to receive compacted fill shall be scarified to a minimum depth of 6 to 8 inches, brought to a near-optimum moisture condition (generally within optimum and 2 percent above optimum moisture content) and re-compacted per project requirements. Removal bottoms, over-excavation/undercut bottoms, and areas to receive fill shall be observed and accepted by the geotechnical consultant prior to fill placement. **Temporary Excavations.** Temporary excavations shall be performed in accordance with project plans, specifications, and applicable Occupational Safety and Health Administration (OSHA) requirements. Excavations shall be laid back or shored in accordance with OSHA requirements before personnel or equipment are allowed to enter. The majority of site alluvial soils are anticipated to be OSHA						

Type "C" soils. Soil conditions shall be regularly evaluated during construction to verify conditions are as anticipated. The contractor shall be responsible for providing the "competent person" required by OSHA standards to evaluate the soil conditions. Close coordination with the geotechnical consultant shall be maintained to facilitate construction while providing safe excavations. Excavation safety is the sole responsibility of the contractor. Vehicular traffic, stockpiles, and equipment storage shall be set back from the perimeter of excavations a minimum distance equivalent to a 1:1 projection from the bottom of the excavation or 5 feet, whichever is greater. Once an excavation has been initiated, it shall be backfilled as soon as practical. Prolonged exposure of temporary excavations may result in some localized instability. Excavations shall be planned so that they are not initiated without sufficient time to shore/fill them prior to weekends, holidays, or forecasted rain. ~~All on-site soils shall provide adequate quality fill material provided they are free from organic matter and other deleterious materials. Rock or similar irreducible material with a maximum dimension greater than six inches shall not be buried or placed in fills. However, oversized materials, with a maximum dimension greater than 8 inches, may be placed in fills or buried on site in accordance with recommendations proved by the geotechnical engineer during grading. Oversized material may be stockpiled for landscaping purposes or placed in a rock disposal area as approved by the project owner, developer, geotechnical engineer, and City. Import fill shall be inorganic, non-expansive granular soils free from rocks or lumps greater than six inches in maximum dimension. Sources for import~~						

~~fill shall be approved by the project geotechnical engineer prior to their use. Fill shall be spread in maximum eight inch uniform loose lifts; each lift brought to near optimum moisture content, and compacted to a relative compaction of at least 90 percent in accordance with ASTM D 1557.~~						
4.6.6.1A: Stabilization fills shall be constructed on proposed cut slopes over 5 feet in height in accordance with the detail provided in Appendix D. Keyway widths shall be a minimum of 15 feet wide. Keyways shall be a minimum of 2 feet deep, determined from the lowest toe-of-slope elevation, and tilted back towards the heel a minimum 2 percent or 1-foot (whichever is greater). Stabilization fill backcuts shall be excavated so that at least a minimum 15-foot fill width is maintained for the entire height of the stability fill slope. In general, backcuts shall be excavated at a maximum 1.5:1 (horizontal to vertical) inclination. Properly outletted back drains shall be constructed along stabilization fill backcuts in accordance with Appendix D in the Geotechnical Evaluation, General Earthwork and Grading Specifications for Rough Grading. Flatter backcut inclinations may be required based on observed conditions during grading. The backcuts should not be initiated prior to forecasted rain or be left open for extended periods of time. Backcuts and keyway excavations must be geologically mapped by the geotechnical consultant during excavation to confirm the anticipated conditions. If adverse conditions are exposed, additional analysis and/or remediation measures may be required. The grading contractor must trim the backcuts with a slope board to remove loose material to allow	City of Corona Public Works Building and Safety	Prior to grading	Prior to Issuance of Grading Permit	Review of grading and construction documents, site specific preliminary soils investigations, and on-site inspection.		Withhold Grading Permit and/or Issuance of Stop Work Order

for confirmational mapping. Updated and/or revised geotechnical recommendations may be required based on observed conditions. ~~Cut and fill slopes shall be planned at gradients no steeper than two horizontal to one vertical. Additional information regarding any proposed cut slopes and the existing natural slope stability should be addressed within the site specific preliminary soils investigations when grading/development plans are made available for the specific tracts/development areas.~~						
4.6.6.1D: Design fill slopes are anticipated to be both grossly and surficially stable as designed provided they are constructed in accordance with Appendix D in the Geotechnical Evaluation, General Earthwork and Grading Specifications for Rough Grading and properly maintained subsequent to construction. Fill slopes shall be constructed with a maximum slope ratio of 2:1 (horizontal to vertical). Slope faces shall also be compacted to project recommendations. To improve surficial stability, vegetation specified by the landscape architect shall be established on the slope face as soon as it is practical. ~~Where fills are to be placed against existing slopes steeper than five horizontal to one vertical, the fill shall be properly keyed and benched into competent native materials. The key, constructed across the toe of the slope, shall be a minimum of 12 to 15 feet wide, a minimum of two feet deep at the toe, and sloped back at 2 percent. Benches shall be constructed at approximately two to four feet vertical intervals.~~	City of Corona Public Works Building and Safety	During grading, excavation, and ground-breaking activities.	Prior to on-site construction.	Review of grading and construction documents, site specific preliminary soils investigations, and on-site inspection.		Issuance of Stop Work Order

4.6.6.1E: Graded slopes shall be planted with groundcover vegetation as soon as practical to protect against erosion by reducing runoff velocity. Deep-rooted vegetation that requires little water and is able to survive local climate conditions shall also be established to protect against surficial slumping. Under no circumstances shall slopes be allowed to be bare of vegetation. Landscape vegetation must not be "trimmed" to root structures leaving no protection of the slopes. Irrigation levels shall be kept to the minimum level necessary to establish healthy plant growth. Slopes must not be overwatered. If automatic sprinklers are used, they must be adjusted during periods of rainfall. A landscape professional must be consulted for landscape recommendations. A program for the elimination of burrowing animals in both native and graded slope areas must be established to protect slope stability by reducing the potential for surface water to penetrate into the slope face. Continuous erosion control, rodent control, and maintenance are essential to the long-term stability of all slopes. Trenches excavated on a slope face for utility or irrigation lines and/or for any purpose must be properly backfilled and compacted to project recommendations to the slope face. Observation/testing and acceptance by the geotechnical consultant during trench backfill are recommended. V-ditches shall be inspected and cleared of loose soil and/or debris on a routine basis, especially prior to and during the rainy season. ~~Slopes at the project site shall be planted with a deep-rooted groundcover as soon as possible after completion. The use of succulent ground covers such as iceplant or sedum is not recommended. If watering is necessary to sustain plant growth on slopes, then the watering operation shall be~~	City of Corona Public Works Building and Safety	During construction after on-site grading	During construction after on-site grading	Review of grading and construction documents, site specific preliminary soils investigations, and on-site inspection.		Issuance of Stop Work Order

~~monitored to ensure proper operation of the irrigation system and to prevent overwatering.~~						
4.6.6.1F: Prior to the initiation of any on-site construction, evidence shall be submitted to the City for review and approval that on-site development has incorporated the design and siting recommendations detailed in the site-specific geotechnical evaluation~~investigation~~.	City of Corona Public Works Building and Safety	Prior to Construction and during construction	Prior to Construction and during construction	Review of grading and construction documents, detailed in the site-specific geotechnical investigation, and on-site inspection.		Withhold Building Permit
4.6.6.2A: On-site soils and any imported soils for individual tracts/development areas shall be evaluated for their expansion potential prior to grading and ultimately following completion of the grading operation. The evaluation shall determine and identify specialized construction procedures to specifically resist expansive soil activity in accordance with the CBC and/or applicable local ordinances.	City of Corona Public Works Building and Safety	During grading and construction	Prior to grading and construction	Submit to the City evidence that the soils have been evaluated and construction measures to reduce soil expansion will be implemented.		Withhold Grading Permit and/or Issuance of Stop Work Order
GREENHOUSE GASES AND GLOBAL CLIMATE CHANGE						
4.7.6.1A: Prior to the issuance of each grading permit associated with the Specific Plan, the project developer shall develop and implement a construction waste management plan that would require the recycling and/or salvaging of non-hazardous construction and demolition waste.	City of Corona Building and Safety Planning Division	Prior to issuance of each grading permit.	Prior to issuance of grading permits	Review of construction documents and on-site inspection		Withhold Grading Permit

4.7.6.1B: Prior to the issuance of each building permit associated with the Specific Plan, the project developer shall facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills by providing easily accessible areas that serve each building and are dedicated to the collection and storage of paper, cardboard, glass, plastics, and metals.	City of Corona Building and Safety Planning Division	Prior to construction	Prior to issuance of building permits	Review of construction documents and on-site inspection		Withhold Building Permit
HAZARDOUS MATERIALS						
~~**4.8.6.1B:** If soil from any location on the project site is to be removed or transported off site, the soil export must have a DDT level of less than 1 part per million (ppm). Soil to be exported off site shall be tested, and verification of the soil results shall be submitted to the City for review prior to the issuance of soil export operations.~~	~~City of Corona Building and Safety Planning Division~~	~~Prior to Grading~~	~~Prior to issuance of grading permits~~	~~Submit to the City for review and approval a Hazardous Waste Phase II.~~		~~Withhold Grading Permit~~
4.8.6.1C: If unknown wastes or suspected hazardous materials are discovered during any construction activities on the project site, the following shall occur: • Immediately stop work in the vicinity of the suspected contaminant, removing workers and the public from the area; • Notify the City of Corona Fire Department and the Riverside County Department of Environmental Health; • Notify the project engineer of the implementing agency (the City of Corona) and secure the area containing the unknown wastes or suspect materials as directed by the project engineer; and	City of Corona Building and Safety Public Works	During grading and construction	During grading and construction	On-site Inspection		Issuance of Stop Work Order.

• Notify the implementing agency's Hazardous Waste/Materials Coordinator.						
4.8.6.1D: Testing and remediation of unknown wastes or suspect materials shall be conducted under the purview of the applicable agency (i.e., DTSC, Santa Ana RWQCB, and the Riverside County Department of Environmental Health and/or City). Remediation shall be conducted to the standards established by the Lead Agency (i.e., DTSC, Santa Ana RWQCB, and the Riverside County Department of Environmental Health and/or City). All contaminated soil locations identified shall be remediated below hazardous levels established by Title 22 of the California Code of Regulations and to the satisfaction of the applicable Lead Agency.	City of Corona Building and Safety Public Works	During grading and construction	During grading and construction			Issuance of Stop Work Order.
4.8.6.1E: Prior to the issuance of demolition permits for any planning areas containing structures, any remaining structures on site shall be visually inspected by the project engineer of the implementing agency (City of Corona) prior to demolition activities. If hazardous materials are encountered, the materials shall be tested and properly disposed of in accordance with state and federal regulatory requirements. Any stained soils or surfaces underneath the removed materials shall be sampled. Results of the sampling would indicate the appropriate level of remediation efforts that may be required. Testing and remediation of unknown wastes or suspect materials shall be conducted under the purview of the applicable agency (i.e., DTSC, Santa Ana RWQCB, and/or City). Remediation shall be conducted to the standards established by the Lead Agency (i.e., DTSC, Santa Ana RWQCB, and/or City). All contaminated soil locations identified shall be remediated below hazardous	City of Corona Building and Safety Public Works	Prior to issuance of any Demolition Permit	Prior to issuance of any Demolition Permit	Inspection by the project engineer of the implementing agency (City of Corona) prior to demolition activities.		Withhold Demolition Permit

levels established by Title 22 of the California Code of Regulations and to the satisfaction of the applicable Lead Agency.						
4.8.6.1F: Prior to the issuance of grading permits for each planning area, all miscellaneous debris (e.g., wood and concrete) shall be removed and disposed of at an approved landfill facility prior to construction activities under the purview of the appropriate agency (i.e., DTSC, Santa Ana RWQCB, and/or City). Once removed, a visual inspection of the areas beneath the removed materials shall be performed by the construction contractor as specified by the City of Corona. Any stained soils observed underneath the removed materials shall be sampled. Results of the sampling, if necessary, would indicate the level of remediation efforts that may be required. Remediation shall be conducted to the standards established by the Lead Agency (i.e., DTSC, Santa Ana RWQCB, and/or City). All contaminated soil locations identified shall be remediated below hazardous levels established by Title 22 of the California Code of Regulations and to the satisfaction of the applicable Lead Agency.	City of Corona Building and Safety Public Works	During grading and construction	During grading and construction			Issuance of Stop Work Order.
4.8.6.2A: Prior to the issuance of building permits for each planning area, the project proponent shall prepare, submit, and receive approval from the City and Riverside County Fire Department, a project-specific Wildland Fire Plan/Fuel Modification Plan. The Wildland Fire Plan/Fuel Modification Plan shall include but shall not be limited to the following: • Goals, policies, and actions related to fire funding and fire rehabilitation;	City of Corona Building and Safety Fire Department Riverside County Fire Department	Prior to issuance of Building Permits for each Planning Area	Prior to issuance of Building Permits	Developer shall prepare, submit, and receive approval from the City and Riverside County Fire Department, a project-specific Wildland Fire		Withhold Building Permits

• Fire protection and evacuation plan; • Vegetative fuels management plan; • Public education program; and • Defensible space requirements which meet and/or exceed the City of Corona Fire Department and Riverside County Fire Department Fuel Modification Requirements.				Plan/Fuel Modification Plan for each Planning Area.		
HYDROLOGY AND WATER QUALITY						
4.9.6.1A: Prior to the ~~first~~ issuance of a grading permit by the City for any development within PA 11 and 12A of the Arantine Hills Specific Plan, the project proponent shall file a Notice of Intent (NOI) with the Santa Ana Regional Water Quality Control Board (RWQCB) to be covered under the State National Pollutant Discharge Elimination System (NPDES) General Construction Permit for discharge of storm water associated with construction activities. The project proponent shall submit to the City the Waste Discharge Identification Number as proof that the project's NOI to be covered by the General Construction Permit has been filed with the appropriate RWQCB.	City of Corona Public Works	Prior to grading for any development.	Prior to the Issuance of Grading Permits	Submittal of copy of Notice of Intent (NOI) to City filed with the RWQCB		Withhold Grading Permits
4.9.6.1B: Prior to the first issuance of a grading permit by the City for any development within PA 11 and 12A of the Arantine Hills Specific Plan, the project proponent shall submit to the City of Corona and receive approval for a project-specific Storm Water Pollution Prevention Plan (SWPPP). The SWPPP shall include a surface water control plan and erosion control plan citing specific measures to	City of Corona Public Works	Prior to grading for any development.	Prior to the Issuance of Grading Permits	Review and approval of SWPPP		Withhold Grading Permits

control on-site and off-site erosion during the entire grading and construction period. In addition, the SWPPP shall emphasize structural and nonstructural best management practices (BMPs) to control sediment and non-visible discharges from the site. Some of the BMPs to be implemented may include (but shall not be limited to) the following: • Sediment discharges from the site may be controlled by the following: sandbags, silt fences, straw wattles and temporary debris basins (if deemed necessary), and other discharge control devices. The construction and condition of the BMPs would be periodically inspected during construction, and repairs would be made when necessary as required by the SWPPP. • Materials that have the potential to contribute non-visible pollutants to storm water must not be placed in drainage ways and must be contained, elevated, and placed in temporary storage containment areas. • All loose piles of soil, silt, clay, sand, debris, and other earthen material shall be protected in a reasonable manner to eliminate discharge from the site. Stockpiles would be surrounded by silt fences and covered with plastic tarps. • The SWPPP would include inspection forms for routine monitoring of the site during the construction phase to ensure NPDES compliance. • Additional BMPs and erosion control measures would be documented in the SWPPP and utilized if necessary. • The SWPPP would be kept on site for the entire duration of project construction and will also be available to the local Regional Water Quality Control Board for inspection at any time.						

• In the event that it is not feasible to implement the above BMPs, the City of Corona can make a determination that other BMPs would provide equivalent or superior treatment either on site or off site.						
4.9.6.1C: The Construction Contractor shall be responsible for performing and documenting the application of BMPs identified in the project-specific SWPPP. Weekly inspections shall be performed on sediment control measures called for in the SWPPP. Monthly reports shall be maintained by the Contractor and available for City inspection. A more frequent inspection schedule may be required based on the condition of the site and as required in the NPDES General Construction Permit. In addition, the Contractor would also be required to maintain an inspection log and have the log on site available for review by the City of Corona and the representatives of the Regional Water Quality Control Board.	City of Corona Public Works	During grading and construction weekly inspections	Prior to grading and during grading.	On-site weekly inspections by City and Contractor shall prepare and make available to the City monthly reports and an inspection log.		Issuance of Stop Work Order
4.9.6.2A: Prior to the first issuance of a permit by the City for any project within the Specific Plan area (which includes the issuance of grading permits and building permits), the project proponent shall receive approval from the City of Corona, a project site-specific Water Quality Management Plan (WQMP). The WQMP shall specifically identify pollution prevention, source control, treatment control measures, and other BMPs that shall be used on site to control predictable pollutant runoff in order to reduce impacts to water quality to the maximum extent practicable.	City of Corona Public Works	Prior to grading	Prior to Issuance of Grading Permit and Building Permits	Submittal of WQMP to City for review and approval		Withhold Grading Permit and/or Building Permits.
4.9.6.3A: Prior to the issuance of grading permits of any development within the Arantine Hills Specific Plan, the project proponent shall submit to the City for review and approval, a water conservation plan. The water conservation plan shall include but shall not be limited to the following: • Drought-tolerant landscaping plan; • Indoor project design features such as low-flush toilets and low-flow faucets;	City of Corona Building and Safety Water and Power	Prior to grading	Prior to Issuance of Precise Grading Permits	Submittal of a Water Conservation Plan for City review and approval.		Withhold Precise Grading Permit

• Outdoor project design features such as subsurface irrigation systems, rain sensors, drip irrigation, or high-efficiency sprinkler heads; • Use of alternative water sources (e.g., reclaimed water); and • Educational materials to be utilized by the project tenants.						
4.9.6.3B: Prior to the issuance of occupancy permits for any development within the Arantine Hills Specific Plan, the project proponent shall submit proof to the City that an educational program regarding water usage has been developed for use within the proposed project.	City of Corona Building and Safety Water and Power	Prior to issuance of Occupancy Permits for any development.	Prior to issuance of Occupancy Permits for any development.	Submittal of proof to the City that an educational program regarding water usage has been developed.		Withhold Occupancy Permits.
4.9.6.3C: Prior to the issuance of grading permits for soil movement from PA 14, across Bedford Canyon Wash, and to the Modified Project Site, the project Applicant shall construct the soil bridge on the concrete crossing with Bedford Canyon Wash no earlier than May 1 and remove the bridge no later than October 15. Extensions to these time limits can be made at the discretion of the Riverside County Flood Control and Water Conservation District.	City of Corona Public Works and Riverside County Flood Control and Water Conservation District	Prior to grading activity associated hauling soil from with PA 14 to PA 12.	Prior to Issuance of Grading Permit	Submittal of grading plans to City for review and approval		Issuance of Stop Work Order
~~**4.9.6.4A:** Prior to the issuance of grading permits of any development within the Bedford Canyon Wash Channel, the project proponent shall ensure that drainage facilities and/or improvements necessary for the protection of the development project from the 100-year flood are identified and incorporated into the improvement plans that will be reviewed and approved by the City. A floodplain and sediment transport study, along with other required drainage and/or hydraulic studies, shall be submitted to the Riverside County Flood Control and Water Conservation District for~~	~~City of Corona Public Works~~	~~Prior to grading~~	~~Prior to Issuance of Grading Permit~~	~~Submittal of drainage plans to City for review and approval~~		~~Withhold Grading Permits~~

~~review, approval, and consideration of acceptance of the channel improvements associated with the proposed development. Acceptance of development improvements by the Flood Control and Water Conservation District requires approval of the associated plans and pertinent drainage studies including the sediment transport study. These drainage improvements are required to ensure the proposed project will be protected from a 100-year flood. No building permits shall be issued for lots within the 100-year floodplain as mapped for the Conditional Letter of Map Revision (CLOMR), until Bedford Canyon Wash Channel improvements have been constructed and deemed operationally functional by the City of Corona. At the discretion of the City of Corona, building permits for model home sales may be issued prior to the construction of the channel improvements.~~						
~~**4.9.6.4B:** Prior to the issuance of rough grading permits of for any development within the Arantine Hills Specific Plan, the project proponent shall submit the Conditional Letter of Map Revision (CLOMR) to the Federal Emergency Management Agency (FEMA). Prior to issuance of any building permits, project proponent shall have received approval of the CLOMR certification process by FEMA. The applicant shall secure FEMA's approval for the Letter of Map Revision (LOMR) as appropriate after development is complete.~~	~~City of Corona Public Works~~	~~Prior to grading~~	~~Prior to Issuance of Grading Permit~~	~~Submittal of drainage plans to City for review and approval~~		~~Withhold Grading Permits~~
NOISE						
4.12.6.1A: Prior to the approval of a tentative tract map for each residential area or approval of commercial or industrial uses within the Specific Plan area, the project proponent shall prepare, submit, and receive approval from the City, a final noise analysis. This final noise analysis shall be completed at the tract map level for each residential area or commercial/ industrial area when the precise grading and the architectural plans are available to ensure that all noise sensitive areas will meet the City of Corona noise standards. The final noise	City of Corona Building and Safety Planning Division	Tentative Map Approval	Prior to approval of a tentative tract map for each residential area or approval of commercial or industrial uses.	The project proponent shall prepare, submit, and receive approval from the City, a final noise analysis.		Deny Approval of the Tentative Tract Map.

analysis shall include but shall not be limited to the following: • *Construction Noise Mitigation Program*. The program shall include noise monitoring at selected noise sensitive locations, monitoring complaints procedures, identification of haul routes (if applicable), and identification and mitigation of the major sources of noise. • *Construction Contractor Requirements*. These requirements shall include contract provisions regarding construction equipment noise features and equipment staging procedures.						
4.12.6.2A: Prior to the approval of a tentative tract map for each residential area or approval of commercial or industrial uses within the Specific Plan area within the 65 dBA CNEL and 70 dBA CNEL noise contours for Eagle Glen Parkway from Masters Drive to Bedford Canyon Road, "A" Street, and I-15, the project proponent shall prepare, submit, and receive approval from the City, a final noise analysis. This final noise analysis shall be completed at the tract map level for each residential area or commercial/industrial area when the precise grading and the architectural plans are available to ensure that all noise sensitive areas will meet the City of Corona noise standards.	City of Corona Building and Safety Planning Division	Tentative Map Approval	Prior to approval of a tentative tract map for each residential area or approval of commercial or industrial uses.	The project proponent shall prepare, submit, and receive approval from the City, a final noise analysis.		Deny Approval of the Tentative Tract Map.
4.12.6.3A: Prior to the approval of a tentative tract map for each residential area adjacent to commercial or industrial uses within the Specific Plan area, the project proponent shall prepare, submit, and receive approval from the City, a final noise analysis. This final noise analysis shall be completed at the tract map level for each residential area or commercial/ industrial area when the precise grading and the architectural	City of Corona Building and Safety Planning Division	Throughout construction/on-site inspection.	Prior to approval of a tentative tract map for each residential area or approval of	The project proponent shall prepare, submit, and receive approval from		Deny Approval of the Tentative Tract Map.

plans are available to ensure that all noise sensitive areas will meet the City of Corona noise standards.			commercial or industrial uses.	the City, a final noise analysis.		
TRANSPORTATION						
4.16.6.1A: The master developer shall construct the improvements identified below as mitigation measures for 2017 plus Phase 1 conditions-to improve levels of service in accordance with City requirements: • **Street "C"/Eagle Glen Parkway**: Prior to issuance of a Certificate of Occupancy for the first model home, install a traffic signal, a northbound left-turn lane, a northbound right-turn lane, and a westbound left-turn lane. • **Bedford Canyon Road/Eagle Glen Parkway:** Prior to issuance of the first production home building permit, add a northbound left-turn lane, a northbound through/right lane, a southbound through lane, a second eastbound through lane, and a westbound left-turn lane.	City of Corona Building and Safety Public Works Planning Division	Prior to the issuance of the first production home building permit.	Prior to the issuance of the first production home building permit.	Evidence of construction of the improvements.		Withhold building permit.
4.16.6.2A: Prior to issuance of the first production home building permit, the master developer shall pay a 64% fair share contribution towards the construction of a traffic signal at the Masters Drive/California Avenue intersection.	City of Corona Building and Safety Public Works	Prior to issuance of the first production home building permit.	Prior to the issuance of the first production home building permit.	Evidence of Payment of fair-share contribution.		Withhold building permit.
4.16.6.3A: Prior to the issuance of the first building permit after Phase 1, the master developer shall construct those improvements identified below as mitigation measures for year 2017 plus project conditions to improve levels of service in accordance with City requirements.	City of Corona Public Works	Prior to the issuance of the first building permit after Phase 1.	Prior to issuance of the first building permit after Phase 1.	Evidence of construction of the improvements.		Withhold building permit.

• **Masters Drive/Eagle Glen Parkway:** Install a traffic signal. • **Bedford Canyon Road/Eagle Glen Parkway:** Add a northbound right-turn lane with northbound right-turn overlap phasing, add a shared southbound left/through lane, and add a westbound left-turn lane. • **Street "C"/Street "B":** Install a roundabout and an all-way lane at all approaches. • **Street "A" – Street "D"/Street "B":** Install a roundabout and an all-way lane at all approaches. • **Street "A"/Main Driveway (TAZ 4):** Install a traffic signal, two northbound through lanes, a southbound left-turn lane, two southbound through lanes, a westbound left-turn lane, and a westbound right-turn lane. • **Street "A"/South Driveway (TAZ 4):** Install a stop sign on the westbound approach, two northbound through lanes, a southbound left-turn lane, two southbound through lanes, a westbound left-turn lane, and a single westbound approach lane.						
4.16.6.3B: Prior to the issuance of the first building permit after Phase 1, the master developer shall pay a 99% fair share contribution towards the construction of either a roundabout or traffic signal at the Morales Way/Masters Drive intersection; a 27% fair-share contribution toward the construction of either a roundabout or traffic signal at the Masters Drive/Christopher Lane intersection; and a 98% fair-share contribution towards the construction of either a roundabout or stop sign control at the Via Castilla Street/Masters Drive intersection.	City of Corona Public Works	Prior to the Issuance of the first building permit after Phase 1.	Prior to the Issuance of the first building permit after Phase 1.	Evidence of Payment of fair share contribution.		Withhold building permit.

4.16.6.3C: Prior to the issuance of the first building permit, the master developer shall post bonds for the full amount of the total estimated cost of the I-15/Cajalco Road Interchange Improvement project.	City of Corona Public Works	Prior to the Issuance of the first building permit after Phase 1.	Prior to the Issuance of the first building permit after Phase 1.	Evidence of bond posting.		Withhold building permit.
4.16.6.4A: Prior to the issuance of a the first building permit after Phase 1, the master developer shall make a fair share contribution towards the improvements identified below as mitigation measures for year 2035 plus project conditions. • **Masters Drive/Bennett Avenue:** 32% of the cost to install a traffic signal. • **Bedford Canyon Road/Georgetown Road:** 100% of the cost to install a traffic signal. • **I-15 Southbound Ramps/El Cerrito Road:** 58% of the cost to add an eastbound right-turn lane. • **Temescal Canyon Road/Cajalco Road:** 91% of the cost to add a second southbound left-turn lane, a second eastbound through lane, and a westbound right-turn lane. • **Street "C"/Eagle Glen Parkway:** 100% of the cost to add a traffic signal.	City of Corona Public Works	Prior to the Issuance of the first building permit after Phase 1.	Prior to issuance of the first building permit after Phase 1.	Evidence of Payment of fair share contribution.		Withhold building permit.
UTILITIES AND SERVICE SYSTEMS						
4.17.6.1A: Prior to the issuance of grading permits for any development phase that would occur under the Specific Plan, the project proponent shall obtain verification from the City that planned wastewater capacity improvements at WRF2 or elsewhere in the city's wastewater system are in place and operational or said improvements are funded or under	City of Corona Public Works Water & Power	Prior to grading	Prior to Issuance of Grading Permits	Submittal of evidence that all requirements are fulfilled.		Withhold Grading Permit

construction and will be available for service to completed homes and businesses.						
4.17.6.1B: The City shall implement the mitigation and monitoring plan identified in the EIR for Wastewater Treatment Plant No. 2 as a part of any expansion of said plant. Alternatively, the Developer shall negotiate an advanced funding option for implementation of the mitigation and monitoring plan identified in the EIR for Wastewater Treatment Plant No. 2 in lieu of paying a Sewer Connection Fee for sewer capacity to ensure that wastewater plant capacity is available so phases of the project may proceed without being delayed.	City of Corona Public Works Water & Power	Prior to grading	Prior to Issuance of Grading Permits	Submittal of evidence that all requirements are fulfilled.		Withhold Grading Permit

5.0 LIST OF PREPARERS

5.1 CITY OF CORONA

5.1.1 Community Development Department

Joanne Coletta
Sandra Yang

5.1.2 Public Works

Michele Hindersinn
Emily Stadnik
Rosalva Ureno
Aaron Cox
Tom Koper
Nelson Nelson
Dennis Ralls

5.1.3 Water and Power

Tom Koper

5.2 ENPLANNERS, INC.

Ray Hussey

This Page Intentionally Left Blank

APPENDICES

A: NOP, NOP Response Letters

B-1: Bedford Marketplace Air Quality and Greenhouse Gas Memorandum

B-2: Bedford Marketplace Soil Import/Export Air Quality Assessment

C-1: Biological Technical Report

C-2: MSHCP Consistency Analysis

D-1: Cultural and Paleontological Resources Assessment

D-2: Cultural/Paleontological Resource Survey Mass Grading Plan

E-1: Preliminary Geotechnical Evaluation

E-2: Preliminary Geotechnical Recommendations Mass Grading Plan and Haul Route Study

F-1: Phase I Environmental Site Assessment, Bedford Marketplace - Arantine Hills Tract 8

F-2: Phase I Environmental Site Assessment, Bedford Marketplace – RCTC Portion

G-1: Preliminary Water Quality Management Plan

G-2: Water Supply Assessment Update

G-3: Preliminary Hydrology Analysis Tentative Tract Map 37788

G-4: PA 14 Hydrology and WQMP Certification

H: Noise Impact Analysis

I: Traffic Study

J: Sewer System Hydraulic Analysis Bedford Marketplace

This Page Intentionally Left Blank

APPENDIX A:

NOP, NOP Response Letters

This Page Intentionally Left Blank

2006091093

NOTICE OF PREPARATION

TO:	Responsible Agencies and Interested Parties	FROM:	City of Corona Community Development Department 400 S. Vicentia Avenue Corona, CA 92882

SUBJECT: Notice of Preparation of a Supplemental Environmental Impact Report to the Arantine Hills Specific Plan EIR (SCH #2006091093)

The **City of Corona** will be the Lead Agency and will prepare a supplemental environmental impact report for the project identified below. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the supplemental EIR prepared by our agency when considering your permit or other approval for the project. The Project description, location, and the potential environmental effects are contained in the attached materials.

☐	A copy of the Initial Study IS attached.
☒	A copy of the Initial Study IS NOT attached.
☒	The proposed project IS considered a project of statewide, regional or areawide significance.
☐	The proposed project IS NOT considered a project of statewide, regional or areawide significance.
☐	The proposed project WILL affect highways or other facilities under the jurisdiction of the State Department of Transportation.
☒	The proposed project WILL NOT affect highways or other facilities under the jurisdiction of the State Department of Transportation.
☐	A scoping meeting WILL be held by the Lead Agency.
☒	A scoping meeting WILL NOT be held by the Lead Agency.

If the project meets the criteria requiring the scoping meeting, or if the agency voluntarily elects to hold such a meeting, the date, time and location of the scoping meeting are as follows:

Date: N/A	Time:	Location: N/A

Due to the time limits mandated by State law, your response must be sent at the earliest possible date, but not later than 30 days after receipt of this notice.

Please send your response to **Sandra Yang** at the address shown above. We will need the name of a contact person in your agency.

Project Title:	DPR2019-0019, DPR2019-0020, and DPR2019-0021
Project Location – Specific: Identify street address and cross street or attach a map showing project site (preferably a U.S.G.S. 15' or 7 ½' topographical map identified by quadrangle name):	The Project Site is located on the south side of Eagle Glen Parkway and west side of I-15 freeway. The Project Site is located within the United States Geological Survey (USGS) 7.5-Minute Topographic Map *Corona South* Quadrangle. The Project Site is owned by the Riverside County Transportation Commission and has Assessor's Parcel Numbers (APN) 279-240-033 (6.44 acres) and 279-240-019 (11.33 acres). (See attached maps.)
Project Description:	See Project Description below.
Project Applicant (if any):	Glen Powles, Guardian Capital
California Environmental Protection Agency Hazardous Waste List (if applicable):	N/A

Date: October 22, 2019	Signature:	
	Name:	Sandra Yang
	Title:	Senior Planner
	Telephone:	(951) 279-3553

Consulting firm retained to prepare draft EIR (if applicable): **To Be Determined.**

Name:	
Address:	
City/State/Zip:	
Contact Person:	

Reference: California Code of Regulations, Title 14, (CEQA Guidelines) Sections 15082(a), 15103, 15375.

PROJECT DESCRIPTION

Overview

The Applicant, Bedford Marketplace, LLC, proposes to amend the Arantine Hills Specific Plan (AHSP) to increase the boundary of the AHSP by approximately 17.85 acres. A portion of the additional property, currently owned by the Riverside County Transportation Commission (RCTC), would increase the size of the planned commercial center within the Arantine Hills Specific Plan, referred to as Bedford Marketplace. The remainder of the RCTC surplus property would be designated open space.

The current specific plan permits 80,000 square feet of commercial uses on 10.03 acres zoned for commercial by the specific plan. The amendment to the specific plan, also referred to as AHSP Amendment No. 3, would increase the amount of commercial use to approximately 134,378 square feet plus a 135-room hotel on a combined approximately 21.67 acres. The amendment would also increase the amount of designated Open Space in the AHSP by approximately 6.21 acres.

The applications being processed at the city includes a General Plan Amendment, Specific Plan Amendment, Parcel Map, Noise Variance for construction hours, Precise Plan, and Conditional Use Permits.

While the proposed amendment encompasses both the RCTC property and the 10 acres within the AHSP, reference to the amendment project site pertains only to the 17.85-acre RCTC property, being added into the Arantine Hills Specific Plan boundary.

Location and Surrounding Land Uses

The Arantine Hills Specific Plan and specific plan amendment project site is located in the Bedford Canyon area of the Santa Ana Mountain foothills in the southeastern portion of Corona. The City of Corona is generally situated southwest of the City of Riverside, south of the City of Norco, and north of the City of Lake Elsinore in Riverside County, California (Figure 1). Areas surrounding the amendment include the I-15 freeway to the east, Arantine Hills Specific Plan to the south and west; and Cajalco Road to the north (Figure 2). The Project Site for the amendment is located within the United States Geological Survey (USGS) 7.5-Minute Topographic Map *Corona South* Quadrangle.

The Project Site is owned by the Riverside County Transportation Commission and has Assessor's Parcel Numbers (APN) 279-240-033 (6.44 acres) and 279-240-019 (11.33 acres).

Existing Site Conditions

The Project Site for the amendment is located between the new residential community of Bedford within the Arantine Hills Specific Plan, which has been graded, and the I-15 freeway, including the Cajalco Interchange, which is currently under construction. The Project Site contains ruderal vegetation and has been subject to areas of disturbance from both the grading of Arantine Hills and the construction of the Cajalco Interchange.

The 10-acre commercial property already located within the Arantine Hills Specific Plan adjacent to the Project Site, has been graded as a flat pad and utilities have been stubbed at the entrance to the pad. The extension of Bedford Canyon Road, which would form the western boundary of the Bedford Marketplace has been graded, paved, and curb, gutter, and sidewalk installed. All of this was done with the grading and public improvement permits issued by the city for the portions of the master planned Arantine Hills community currently under construction.

Bedford Canyon Wash, located to the south of the Project Site, is an ephemeral wash with a sandy bottom and sparsely vegetated alluvial fan sage scrub and non-native vegetation. The Wash receives flows from the Santa Ana mountains, through the Eagle Glen Golf Club, through the AHSP area, continuing downstream to Temescal Creek and ultimately the Santa Ana River. As part of implementation of the AHSP, Bedford Wash has been widened and improved with buried rip-rap along the banks and buried grade control structures to control erosion and scour. Two concrete crossings (upstream and downstream) provide access to the south side of the Wash and the associated maintenance access road. Restoration of Bedford Wash includes planting with an alluvial fan sage scrub seed mix.

Existing General Plan and Zoning

The Project Site subject to the specific plan amendment is currently designated Agriculture on the City of Corona General Plan Land Use Map and is currently zoned Agriculture on the City of Corona Zoning Map.

Background

The AHSP was first approved by the City of Corona on August 15, 2012, by Resolution No. 2012-091. Project approval included a General Plan Amendment (GPA09-005), a Specific Plan (SP09-001), a Tentative Tract Map (TTM 36294), and an EIR which authorized a 276- acre site, located west of Interstate 15 and south of Cajalco Road, for future residential and non-residential development. AHSP Amendment No.1 was adopted by City Council in June 2016. Project approval included a General Plan Amendment (GPA2015-001), a Specific

Plan Amendment (SPA2015-002), a Tentative Map (TTM 36294R), and a Supplement to the certified EIR. AHSP Amendment No.2 was adopted by the City Council on December 19, 2018. Project approval included a General Plan Amendment (GPA2018-001), a Specific Plan Amendment (SPA2018-001), a Parcel Map (PM 37036), and an Addendum to the SEIR. The AHSP as approved allows up to a maximum of 1,806 dwelling units and 80,000 square feet of General Commercial uses within the 307.8-acre Specific Plan area.

The following descriptions are used interchangeably:

- Approved Project = Original Arantine Hills Specific Plan, as modified by Specific Plan Amendment (SPA) No. 1 and SPA No. 2; and
- Amended Project = Proposed Project = Arantine Hills SPA No. 3 = additional 11.64 acres designated Commercial and 6.21 acres designed Open Space, resulting in an expansion of the commercial use from 80,000 square feet in the approved specific plan to approximately 134,378 square feet plus a 135-room hotel (Amended Project).

Project Description

The Applicant, Bedford Marketplace, LLC, proposes to amend the Arantine Hills Specific Plan (AHSP Amendment No. 3) to increase the boundary of the AHSP by approximately 17.85 acres (Amended Project Site). The proposal would also increase the area designated Commercial in the AHSP from 10.03 acres to approximately 21.67 acres and increase the amount of commercial use from 80,000 square feet to approximately 134,378 square feet plus a 135-room hotel (with a height of four stories or 50 feet, whichever is greater). Approximately 6.21 acres of the Proposed Project would be designated Open Space within the AHSP. The Applicant is requesting a General Plan Amendment, Specific Plan Amendment, Parcel Map, Construction Hours/Noise Variance, Precise Plan, and Conditional Use Permits.

General Plan Amendment

The Project Site currently has a General Plan land use designation of Agriculture. The proposed General Plan Amendment would change the land use designation from Agriculture to General Commercial and Open Space.

Specific Plan Amendment (AHSP Amendment No. 3)

The proposed AHSP Amendment No. 3 would make the following changes to the Arantine Hills Specific Plan.

- Adjust the boundary of the AHSP to add the approximately 17.85 acres to the specific plan.

- Change the zoning on the 17.85 acres through the specific plan amendment from Agriculture to 11.64 acres of Commercial and 6.21 acres of Open Space.

- Designate the Amended Project Site as Planning Area 11 in the AHSP with a land use designation of Commercial and increase the acreage of PA 11 from 10.03 acres to 21.67 acres.

- Increase the total permitted commercial development in the AHSP from 80,000 square feet to 134,378 square feet[1] plus a 135-room hotel.

- Create Planning Area 12A with an Open Space Designation and increase the amount of open space in the AHSP by approximately 6.21 acres.

- Edits to Table 6-1 to clarify the application of shared parking and FAR requirements, and minor additional edits to the Specific Plan for data and text consistency.

[1] The 134,378 square feet represents the current design of the proposed commercial center. Minor changes to the design of the center could occur during the entitlement and planning process resulting in minor changes to the square footage of the center. The AHSP has a process to accommodate minor statistical changes without requiring a subsequent Specific Plan Amendment.

- Permit the use of Farmhouse architecture for the commercial center.

Parcel Map

Subdivide Assessor's Parcel Numbers 279-240-033 and 279-240-019 (17.77 acres) into nine parcels for commercial purposes with certain parcels being created for open space.

Grading Plan - Construction Hours/Noise Variance

The Amended Project Site currently has a lower elevation than the existing graded commercial pad included in the Arantine Hills Specific Plan. The Amended Project Site is also lower in elevation than the newly constructed sewer lift station within the Arantine Hills Specific Plan, such that at the current elevation, the Amended Project Site would not gravity flow to the lift station, resulting in the need for additional pumps. To bring the Amended Project Site up to an elevation similar (within five feet) of the existing 10-acre commercial pad and at an elevation where sewer could gravity flow to the existing lift station, import of approximately 440,000 cubic yards of dirt is required.

Two alternatives have been identified for importing dirt onto the Amended Project Site.

Import Alternative 1: One alternative to importing dirt to the Amended Project Site would occur by truck from an off-site source. A potential source of import (Borrow Site) has been identified from the FST Sand and Gravel Mine, located east of I-15 and approximately ½ mile east of El Cerrito Road. The dirt would be hauled from a Borrow Site on El Cerrito to I-15 southbound, exit at Cajalco Road and enter the Amended Project Site by crossing Cajalco Road from the southbound off-ramp with traffic control. Trucks would return onto Cajalco Road, enter I-15 northbound to El Cerrito Road and travel east to the Borrow Site. This proposed haul route requires approval of a temporary encroachment permit from Caltrans and the City of Corona.

The Applicant proposes to import dirt during the nighttime hours (8 pm to 4 am) and complete grading operations both during daytime and nighttime hours. During the nighttime hours, dirt would be imported to the Amended Project Site, dumped, and placed by grading equipment. Double-belly dirt haulers would be used, which do not require backing or banging of tailgates. The trucks would drive a continuous route across the Amended Project Site while dumping their load. One (1) rubber tire bulldozer, such as a Caterpillar 834, would be used to move and compact the imported dirt. The site is large enough to avoid backing up and the use of warning signals. Additionally, the rubber tire equipment would be used to avoid the noise from tracked equipment. In addition to the bulldozer, one (1) water truck (4,000 gallon) and one (1) street sweeper would be used during the import operation.

The import operation would include 250 full loads per night, assuming 14 cubic yards per load, for a total of 3,500 cubic yards per night. To import 440,000 cubic yards, approximately 126 nights of import would be required. The grading contractor and dirt hauler can double the amount of import per night if no new significant environmental impacts or no substantial increase in the severity of previously identified significant impacts would occur, which would cut the import duration in half.

Daytime grading activities would initially last for approximately two weeks and begin before import and overlap with initial import operations. The daytime activities include remedial grading, which requires the over-excavation of approximately four to six feet below existing ground surface. To accomplish the over-excavation, the grading contractor would use three (3) Caterpillar 651 scrapers, one (1) tracked bulldozer (Caterpillar D-8), one (1) water truck, and one (1) street sweeper. The over-excavated material would be stockpiled on site. Additional daytime grading would occur after imported material has been placed in the over-excavated areas to bring the site closer to proposed grades. The stockpiled material would then be placed over the imported material to create the finished building pad, compacted to meet geotechnical specifications.

Import Alternative 2: Another alternative to import dirt to the Amended Project Site involves importing dirt from Planning Area 14 within the Arantine Hills Specific Plan (AHSP). Planning Area 14, approximately 26 acres, is located south of Bedford Canyon Wash and is designated Medium Density Residential. This area

forms an elevated plateau above Bedford Canyon Wash. Lowering the elevation of PA 14 by approximately 13 feet would generate approximately 425,000 cubic yards of fill for the Amended Project Site. The remaining 15,000 cubic yards could be generated by lowering PA 14 an additional half foot or importing the remaining fill from off-site.

To import dirt from PA 14, an access ramp would be graded in the northeast portion of PA 14 leading down to the existing concrete crossing of Bedford Canyon Wash. Grading the access ramp would require creating a notch in the existing bluff with side slopes opened at a 2:1 grade. The lower portion of the access ramp would be steeper than 2:1 and reinforced with geo-grid or similar stabilizer. Fill, ranging from 5 feet to 10 feet would be temporarily placed on top of the existing concrete pad crossing Bedford Canyon Wash to both protect the concrete pad and function as a ramp to gain elevation.

The ramp from PA 14 to the concrete crossing of Bedford Canyon Wash would be constructed by an excavator. Careful grading operations and BMPs would avoid dirt spoils in Bedford Wash. While this import operation would need to take place during the dry season, temporary pipe culverts would be placed on top of the concrete pad under the dirt ramp in case unexpected monsoonal storms caused Bedford Canyon Wash to flow. Following grading of the ramp, scrapers would move the fill dirt from PA 14 to the Amended Project Site. Only one scraper would fit on the dirt bridge across Bedford Canyon Wash, therefore, this part of the haul route would be limited to one-way traffic. After crossing Bedford Wash, scrapers would continue north, paralleling the I-15 freeway, on the Amended Project Site property to place the fill dirt. All dirt movement would be done off street.

Following completion of the import, the temporary dirt bridge and culverts would be removed from the concrete pad crossing Bedford Canyon Wash and the notch in the bluff for the access ramp would be reconstructed at 2:1 slopes and surface terrace drains would be added to control storm runoff to minimize erosion. The graded slopes would be replanted with a native coastal sage scrub mix.

For this alternative, the over-excavation work would be the same as described in Alternative No. 1. To move the soil from PA 14 to the Amended Project Site the grading contractor would use six (6) 657 scrapers, one (1) D-10 bulldozer, one (1) 834 Rubber Tire Compactor, three (3) water trucks, and on 14H Blade for finishing. Following dirt movement, the bluff would be reconstructed using one (1) 345 Excavator, one (1) 623 Scraper, one (1) 834 Rubber Tire Compactor, one (1) 980 Rubber Tire Loader, one (1) D-5 bulldozer, one (1) 84-inch Compactor, and a water truck,

Infrastructure Improvements

Domestic water and dry utility lines currently exist within the extension of Bedford Canyon Road adjacent to the existing 10-acre commercial pad within the AHSP. An update to the Water Supply Assessment will be prepared, but there is no indication any additional domestic water improvements would be necessary.

Sewer is planned to gravity flow to the existing lift station located within the AHSP.

Stormflows from the Amended Project Site would be collected in a new detention/water quality basin located south of the proposed commercial center. The basin would be sized to retard peak flows to below the level of existing peak discharge conditions. In addition to detaining flows, the basin would allow for infiltration and provide water quality treatment. The detention basin is planned to discharge to Bedford Wash. An outlet pipe and associated headwall would be constructed within the previously disturbed and newly constructed bank of Bedford Wash on the concrete spillway, which would avoid disturbing the soft bottom of Bedford Wash and impacting native vegetation.

Precise Plan

A Precise Plan is required to approve the final design of the entire Bedford Marketplace, which includes the Amended Project Site and the Approved Project Site (the existing 10 acres designated Commercial in the AHSP). Bedford Marketplace is planned as a neighborhood serving commercial center designed to bring commercial services to the Bedford and Eagle Glen communities. Bedford Marketplace would have three

entrances from the extension of Bedford Canyon Road. A combination 8-foot sidewalk and 6-foot trail would form the western boundary and provide pedestrian connectivity from the intersection of Bedford Canyon Road and Eagle Glen Parkway to the newly installed trail system located on the north side of Bedford Wash, including the new dog park, and to residential areas within the Bedford residential community.

While the retail and service users have not been finalized and are subject to change, potential uses within Bedford Marketplace include: a fuel facility with convenience store, auto-spa, quick serve coffee with drive thru, financial institution with drive thru, day care center, health and fitness , super market, pharmacy, sit-down restaurants, quick serve restaurants, and other retail stores that are consistent in other neighborhood serving centers. Located in the southeastern portion of the Amended Project Site is a planned hotel. The hotel is planned for 135 rooms with surface parking.

Parking consistent with the City's parking code is planned throughout Bedford Marketplace. Trail users could utilize the parking within Bedford Marketplace and access the trail along Bedford Canyon Wash by either using the new trail planned along the east side of Bedford Marketplace or by using the sidewalk along the east side of Bedford Canyon Road. The fuel facility and convenience store would provide convenient services for trail users, as well as the other restaurants and retail businesses within the center.

Shopping center identification monument signage is planned at the corner of Bedford Canyon Road and Eagle Glen Parkway. A tenant identification pylon sign facing I-15 is planned north of the hotel site and a pylon sign specific to the hotel is planned south of the hotel site along I-15. Certain uses, such as the hotel, will also have wall-mounted building signage on the eastern elevation of the building. A detailed master sign program outlines all proposed signage.

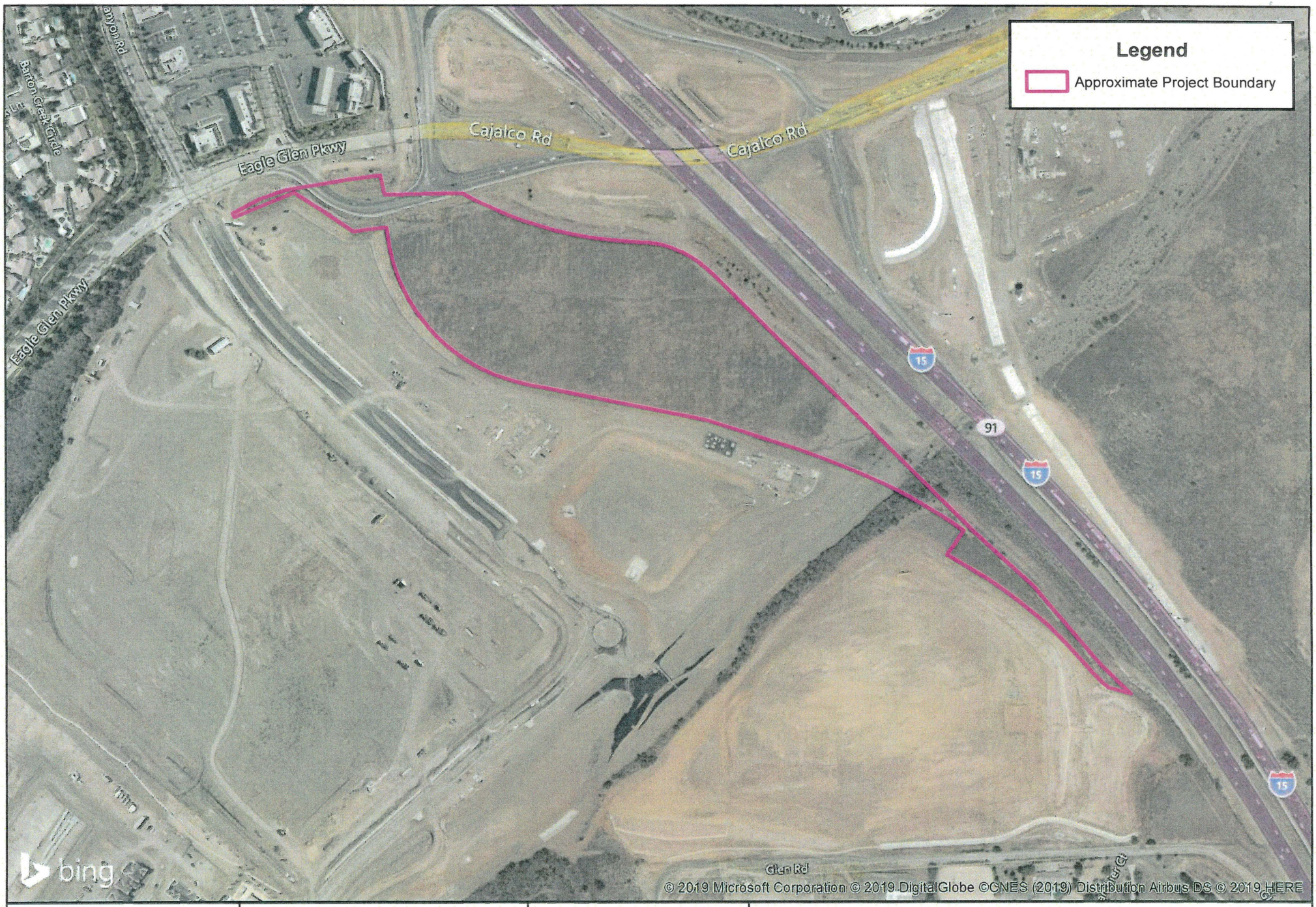
Conditional Use Permits

Several of the proposed uses will require a Conditional Use Permit (CUP). These include a carwash, drive-through coffee shop, drive-through restaurant, and daycare.



GIS Prepared By: Carlson SLS Created: August 2, 2019	0 1,250 2,500 5,000 Feet 1 inch = 5,000 feet	Data Sources: Bing Maps	***Guardian Capital: Bedford Marketplace*** Regional Map

FIGURE 1



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

0 100 200 400 600 800 Feet

1 inch = 400 feet

Data Source: Bing Maps

Guardian Capital: Bedford Marketplace

Vicinity Map

FIGURE 2

RIVERSIDE COUNTY TRANSPORTATION COMMISSION

4080 Lemon Street, 3rd Floor • Riverside, CA
Mailing Address: P.O. Box 12008 • Riverside, CA 92502-2208
951.787.7141 • 951.787.7920 • www.rctc.org

December 6, 2019

City of Corona
Attn: Sandra Yang
400 South Vicentia Avenue
Corona, CA 92882
Sandra.Yang@corona.ca.gov

Subject: Notice of Preparation of a Supplemental Impact Report to Arantine Hills Specific Plan EIR (SCH #2006091093)

Dear Ms. Yang:

The Riverside County Transportation Commission (RCTC), received the above referenced document on November 7, 2019. As the owner of the property that is in escrow and is proposed to be sold to Bedford Market Place, LLC., RCTC supports efforts to amend the supplemental Environmental Impact Report (SEIR) for the Arantine Hills Specific Plan Amendment. RCTC has and will continue to coordinate closely with Bedford Market Place, LLC. through the sale of the property. To ensure the success of the Arantine Hills development, the operation of the I-15 Express Lanes, and future toll facility development, RCTC is requesting that the following be considered during the processes to approve the Supplemental Environmental Impact Report, Specific Plan Amendment, Precise Plan, Project Conditional Use Permit, Final Project Plans, and Construction Permitting:

1. To ensure that hauling does not impact operations of the I-15 Express Lanes, it is requested that this hauling operation be conducted outside the following expected I-15 peak hours:
    - Monday – Thursday: 4:00 AM – 10:00 AM and 3:00 PM – 8:00 PM
    - Friday: 1:00 PM – 10:00 PM
2. The proposed Arantine Hills development project indicates that there will be hotels, restaurants, day care placed on the property. Caltrans requirements for traffic noise sensitive areas include, outside eating areas, outside recreational areas, or patios. If these areas are within 500 feet of the freeway lanes, a noise study will be required and potential noise barriers be considered with development of the future toll facilities on I-15. RCTC requests that where practical, these areas be placed in an area beyond 500 feet of the freeway lanes or that noise studies be completed for these potential noise sensitive areas.

RCTC appreciates your consideration of the above comments and looks forward to working with you to further your development and improve mobility on the I-15 corridor. If you have any questions or would like to discuss further, please contact me at 951.787.7141 or sblanco@rctc.org.

Sincerely,

Stephanie Blanco
Capital Projects Manager

cc: File

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

SENT VIA USPS AND E-MAIL:
Sandra.Yang@coronaca.gov
Sandra Yang, Senior Planner
City of Corona, Community Development Department
400 South Vincentia Avenue
Corona, CA 92882

November 19, 2019

Notice of Preparation of a Supplemental Environmental Impact Report for the Proposed Arantine Hills Specific Plan

South Coast Air Quality Management District (South Coast AQMD) staff appreciates the opportunity to comment on the above-mentioned document. South Coast AQMD staff's comments are recommendations regarding the analysis of potential air quality impacts from the Proposed Project that should be included in the Supplemental Environmental Impact Report (EIR). Please send South Coast AQMD a copy of the Supplemental EIR upon its completion and public release. Note that copies of the Supplemental EIR that are submitted to the State Clearinghouse are not forwarded to South Coast AQMD. Please forward a copy of the Supplemental EIR directly to South Coast AQMD at the address shown in the letterhead. **In addition, please send with the Supplemental EIR all appendices or technical documents related to the air quality, health risk, and greenhouse gas analyses and electronic versions of all air quality modeling and health risk assessment files[1]. These include emission calculation spreadsheets and modeling input and output files (not PDF files). Without all files and supporting documentation, South Coast AQMD staff will be unable to complete our review of the air quality analyses in a timely manner. Any delays in providing all supporting documentation will require additional time for review beyond the end of the comment period.**

Air Quality Analysis

South Coast AQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. South Coast AQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from South Coast AQMD's Subscription Services Department by calling (909) 396-3720. More guidance developed since this Handbook is also available on South Coast AQMD's website at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/ceqa-air-quality-handbook-(1993). South Coast AQMD staff also recommends that the Lead Agency use the CalEEMod land use emissions software. This software has recently been updated to incorporate up-to-date state and locally approved emission factors and methodologies for estimating pollutant emissions from typical land use development. CalEEMod is the only software model maintained by the California Air Pollution Control Officers Association (CAPCOA) and replaces the now outdated URBEMIS. This model is available free of charge at: www.caleemod.com.

South Coast AQMD has also developed both regional and localized significance thresholds. South Coast AQMD staff requests that the Lead Agency quantify criteria pollutant emissions and compare the results

[1] Pursuant to the CEQA Guidelines Section 15174, the information contained in an EIR shall include summarized technical data, maps, plot plans, diagrams, and similar relevant information sufficient to permit full assessment of significant environmental impacts by reviewing agencies and members of the public. Placement of highly technical and specialized analysis and data in the body of an EIR should be avoided through inclusion of supporting information and analyses as appendices to the main body of the EIR. Appendices to the EIR may be prepared in volumes separate from the basic EIR document, but shall be readily available for public examination and shall be submitted to all clearinghouses which assist in public review.

to South Coast AQMD's CEQA regional pollutant emissions significance thresholds to determine air quality impacts. South Coast AQMD's CEQA regional pollutant emissions significance thresholds can be found here at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf. In addition to analyzing regional air quality impacts, South Coast AQMD staff recommends calculating localized air quality impacts and comparing the results to localized significance thresholds (LSTs). LSTs can be used in addition to the recommended regional significance thresholds as a second indication of air quality impacts when preparing a CEQA document. Therefore, when preparing the air quality analysis for the Proposed Project, it is recommended that the Lead Agency perform a localized analysis by either using the LSTs developed by South Coast AQMD staff or performing dispersion modeling as necessary. Guidance for performing a localized air quality analysis can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the Proposed Project and all air pollutant sources related to the Proposed Project. Air quality impacts from both construction (including demolition, if any) and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, such as sources that generate or attract vehicular trips, should be included in the analysis.

In the event that the Proposed Project generates or attracts vehicular trips, especially heavy-duty diesel-fueled vehicles, it is recommended that the Lead Agency perform a mobile source health risk assessment. Guidance for performing a mobile source health risk assessment ("*Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis*") can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mobile-source-toxics-analysis. An analysis of all toxic air contaminant impacts due to the use of equipment potentially generating such air pollutants should also be included.

In addition, guidance on siting incompatible land uses can be found in the California Air Resources Board's *Air Quality and Land Use Handbook: A Community Health Perspective*, which can be found at: http://www.arb.ca.gov/ch/handbook.pdf. CARB's Land Use Handbook is a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process. Guidance[2] on strategies to reduce air pollution exposure near high-volume roadways can be found at: https://www.arb.ca.gov/ch/rd_technical_advisory_final.PDF.

Mitigation Measures

In the event that the Proposed Project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized during project construction and operation to minimize these impacts. Pursuant to CEQA Guidelines Section 15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed. Several resources are available to assist the Lead Agency with identifying potential mitigation measures for the Proposed Project, including:

[2] In April 2017, CARB published a technical advisory, *Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways: Technical Advisory*, to supplement CARB's Air Quality and Land Use Handbook: A Community Health Perspective. This technical advisory is intended to provide information on strategies to reduce exposures to traffic emissions near high-volume roadways to assist land use planning and decision-making in order to protect public health and promote equity and environmental justice. The technical advisory is available at: https://www.arb.ca.gov/ch/landuse.htm.

- Chapter 11 "Mitigating the Impact of a Project" of South Coast AQMD'S *CEQA Air Quality Handbook* South Coast AQMD's CEQA web pages available here: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mitigation-measures-and-control-efficiencies
- South Coast AQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook for controlling construction-related emissions and Rule 1403 – Asbestos Emissions from Demolition/Renovation Activities
- South Coast AQMD's Mitigation Monitoring and Reporting Plan (MMRP) for the 2016 Air Quality Management Plan (2016 AQMP) available here (starting on page 86): http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2017/2017-mar3-035.pdf
- CAPCOA's *Quantifying Greenhouse Gas Mitigation Measures* available here: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf

Alternatives

In the event that the Proposed Project generates significant adverse air quality impacts, CEQA requires the consideration and discussion of alternatives to the project or its location which are capable of avoiding or substantially lessening any of the significant effects of the project. The discussion of a reasonable range of potentially feasible alternatives, including a "no project" alternative, is intended to foster informed decision-making and public participation. Pursuant to CEQA Guidelines Section 15126.6(d), the Supplemental EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the Proposed Project.

Permits

If implementation of the Proposed Project requires a permit from South Coast AQMD, South Coast AQMD should be identified as a Responsible Agency for the Proposed Project in the EIR. For more information on permits, please visit South Coast AQMD's webpage at: http://www.aqmd.gov/home/permits. Questions on permits can be directed to South Coast AQMD's Engineering and Permitting staff at (909) 396-3385.

Data Sources

South Coast AQMD rules and relevant air quality reports and data are available by calling South Coast AQMD's Public Information Center at (909) 396-2001. Much of the information available through the Public Information Center is also available at South Coast AQMD's webpage at: http://www.aqmd.gov.

South Coast AQMD staff is available to work with the Lead Agency to ensure that project's air quality and health risk impacts are accurately evaluated and mitigated where feasible. If you have any questions regarding this letter, please contact me at lsun@aqmd.gov.

Sincerely,

Lijin Sun

Lijin Sun, J.D.
Program Supervisor, CEQA IGR
Planning, Rule Development & Area Sources

LS
RVC191101-16
Control Number

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691 Phone: (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov

RECEIVED
NOV 08 2019
COMMUNITY DEVELOPMENT DEPT.

November 1, 2019

Sandra Yang
Corona, City of
400 S. Vicentia Avenue
Corona, CA 92882

RE: SCH# 2006091093, Bedford Marketplace/ DPR2019-0019, DPR2019-0020 and DPR2019-0021 Project, Riverside County

Dear Ms. Yang:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements**. If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:
    a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
    b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:
    a. Avoidance and preservation of the resources in place, including, but not limited to:
        i. Planning and construction to avoid the resources and protect the cultural and natural context.
        ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
    b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
        i. Protecting the cultural character and integrity of the resource.
        ii. Protecting the traditional use of the resource.
        iii. Protecting the confidentiality of the resource.
    c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
    d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).
    e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).
    f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
    a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.
    b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
    c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
    a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
    b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
    a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
    b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
    c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Staff Services Analyst

cc: State Clearinghouse

SCAG
INNOVATING FOR A BETTER TOMORROW

SOUTHERN CALIFORNIA
ASSOCIATION OF GOVERNMENTS
900 Wilshire Blvd., Ste. 1700
Los Angeles, CA 90017
(213) 236-1800
www.scag.ca.gov

REGIONAL COUNCIL OFFICERS

President
Bill Jahn, Big Bear Lake

First Vice President
Rex Richardson, Long Beach

Second Vice President
Clint Lorimore, Eastvale

Immediate Past President
Alan D. Wapner, San Bernardino
County Transportation Authority

COMMITTEE CHAIRS

Executive/Administration
Bill Jahn, Big Bear Lake

Community, Economic &
Human Development
Peggy Huang, Transportation
Corridor Agencies

Energy & Environment
Linda Parks, Ventura County

Transportation
Cheryl Viegas-Walker, El Centro

November 21, 2019

Ms. Sandra Yang, Senior Planner
City of Corona, Community Development Department
400 S. Victoria Avenue
Corona, California 92882
Phone: (951) 279-3553
E-mail: Sandra.Yang@coronaca.gov

RE: SCAG Comments on the Notice of Preparation of a Draft Supplemental Environmental Impact Report for the Arantine Hills Specific Plan [SCAG NO. IGR7456]

Dear Ms. Yang,

Thank you for submitting the Notice of Preparation (NOP) of a Draft Supplemental Environmental Impact Report (SEIR) for the Arantine Hills Specific Plan ("proposed project") to the Southern California Association of Governments (SCAG) for review and comment. SCAG is the authorized regional agency for Inter-Governmental Review (IGR) of programs proposed for Federal financial assistance and direct Federal development activities, pursuant to Presidential Executive Order 12372. Additionally, SCAG reviews the Environmental Impact Reports of projects of regional significance for consistency with regional plans pursuant to the California Environmental Quality Act (CEQA) and CEQA Guidelines.

SCAG is also the designated Regional Transportation Planning Agency under state law, and is responsible for preparation of the Regional Transportation Plan (RTP) including the Sustainable Communities Strategy (SCS) pursuant to Senate Bill (SB) 375. As the clearinghouse for regionally significant projects per Executive Order 12372, SCAG reviews the consistency of local plans, projects, and programs with regional plans.[1] SCAG's feedback is intended to assist local jurisdictions and project proponents to implement projects that have the potential to contribute to attainment of Regional Transportation Plan/Sustainable Community Strategies (RTP/SCS) goals and align with RTP/SCS policies.

SCAG staff has reviewed the NOP of the Draft SEIR for the Arantine Hills Specific Plan (AHSP). The proposed project includes an amendment to the AHSP by adding approximately 17.85 acres which will increase the amount of commercial use to 134,378 square feet, add a 135-room hotel and increase the acreage of designated open space to approximately 6.21 acres.

When available, please send environmental documentation to *SCAG's Los Angeles office in Los Angeles (900 Wilshire Boulevard, Ste. 1700, Los Angeles, California 90017) or by email to au@scag.ca.gov* providing, at a minimum, the full public comment period for review.

If you have any questions regarding the attached comments, please contact the Inter-Governmental Review (IGR) Program, attn.: Anita Au, Associate Regional Planner, at (213) 236-1874 or au@scag.ca.gov. Thank you.

Sincerely,

Ping Chang
Manager, Compliance and Performance Monitoring

[1] Lead agencies such as local jurisdictions have the sole discretion in determining a local project's consistency with the 2016 RTP/SCS for the purpose of determining consistency for CEQA. Any "consistency" finding by SCAG pursuant to the IGR process should not be construed as a determination of consistency with the 2016 RTP/SCS for CEQA.

COMMENTS ON THE NOTICE OF PREPARATION OF A DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT FOR THE ARANTINE HILLS SPECIFIC [SCAG NO. IGR7456]

CONSISTENCY WITH RTP/SCS

SCAG reviews environmental documents for regionally significant projects for their consistency with the adopted RTP/SCS. For the purpose of determining consistency with CEQA, lead agencies such as local jurisdictions have the sole discretion in determining a local project's consistency with the RTP/SCS.

Please note the Draft 2020 RTP/SCS (Connect SoCal) was released for public review on November 14, 2019 until January 24, 2019. The Final Connect SoCal is anticipated to be adopted in April 2020. Please refer to Connect SoCal goals and growth forecast for RTP/SCS consistency for future projects. The Draft Connect SoCal can be reviewed here: https://www.connectsocal.org/Pages/Connect-SoCal-Draft-Plan.aspx.

2016 RTP/SCS GOALS

The SCAG Regional Council adopted the 2016 RTP/SCS in April 2016. The 2016 RTP/SCS seeks to improve mobility, promote sustainability, facilitate economic development and preserve the quality of life for the residents in the region. The long-range visioning plan balances future mobility and housing needs with goals for the environment, the regional economy, social equity and environmental justice, and public health (see http://scagrtpscs.net/Pages/FINAL2016RTPSCS.aspx). The goals included in the 2016 RTP/SCS may be pertinent to the proposed project. These goals are meant to provide guidance for considering the proposed project within the context of regional goals and policies. Among the relevant goals of the 2016 RTP/SCS are the following:

SCAG 2016 RTP/SCS GOALS	
RTP/SCS G1:	*Align the plan investments and policies with improving regional economic development and competitiveness*
RTP/SCS G2:	*Maximize mobility and accessibility for all people and goods in the region*
RTP/SCS G3:	*Ensure travel safety and reliability for all people and goods in the region*
RTP/SCS G4:	*Preserve and ensure a sustainable regional transportation system*
RTP/SCS G5:	*Maximize the productivity of our transportation system*
RTP/SCS G6:	*Protect the environment and health for our residents by improving air quality and encouraging active transportation (e.g., bicycling and walking)*
RTP/SCS G7:	*Actively encourage and create incentives for energy efficiency, where possible*
RTP/SCS G8:	*Encourage land use and growth patterns that facilitate transit and active transportation*
RTP/SCS G9:	*Maximize the security of the regional transportation system through improved system monitoring, rapid recovery planning, and coordination with other security agencies**
	**SCAG does not yet have an agreed-upon security performance measure.*

For ease of review, we encourage the use of a side-by-side comparison of SCAG goals with discussions of the consistency, non-consistency or non-applicability of the goals and supportive analysis in a table format. Suggested format is as follows:

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:
   a. A brief description of the project.
   b. The lead agency contact information.
   c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
   d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).
   a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
   a. Alternatives to the project.
   b. Recommended mitigation measures.
   c. Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:
   a. Type of environmental review necessary.
   b. Significance of the tribal cultural resources.
   c. Significance of the project's impacts on tribal cultural resources.
   d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:
   a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
   b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

SCAG 2016 RTP/SCS GOALS		
	Goal	Analysis
RTP/SCS G1:	*Align the plan investments and policies with improving regional economic development and competitiveness*	*Consistent: Statement as to why;* *Not-Consistent: Statement as to why;* *Or* *Not Applicable: Statement as to why;* *DEIR page number reference*
RTP/SCS G2:	*Maximize mobility and accessibility for all people and goods in the region*	*Consistent: Statement as to why;* *Not-Consistent: Statement as to why;* *Or* *Not Applicable: Statement as to why;* *DEIR page number reference*
etc.		etc.

2016 RTP/SCS STRATEGIES

To achieve the goals of the 2016 RTP/SCS, a wide range of land use and transportation strategies are included in the 2016 RTP/SCS. Technical appendances of the 2016 RTP/SCS provide additional supporting information in detail. To view the 2016 RTP/SCS, please visit: http://scagrtpscs.net/Pages/FINAL2016RTPSCS.aspx. The 2016 RTP/SCS builds upon the progress from the 2012 RTP/SCS and continues to focus on integrated, coordinated, and balanced planning for land use and transportation that the SCAG region strives toward a more sustainable region, while the region meets and exceeds in meeting all of applicable statutory requirements pertinent to the 2016 RTP/SCS. These strategies within the regional context are provided as guidance for lead agencies such as local jurisdictions when the proposed project is under consideration.

DEMOGRAPHICS AND GROWTH FORECASTS

Local input plays an important role in developing a reasonable growth forecast for the 2016 RTP/SCS. SCAG used a bottom-up local review and input process and engaged local jurisdictions in establishing the base geographic and socioeconomic projections including population, household and employment. At the time of this letter, the most recently adopted SCAG jurisdictional-level growth forecasts that were developed in accordance with the bottom-up local review and input process consist of the 2020, 2035, and 2040 population, households and employment forecasts. To view them, please visit http://www.scag.ca.gov/Documents/2016GrowthForecastByJurisdiction.pdf. The growth forecasts for the region and applicable jurisdictions are below.

	Adopted SCAG Region Wide Forecasts			Adopted City of Corona Forecasts		
	Year 2020	Year 2035	Year 2040	Year 2020	Year 2035	Year 2040
Population	19,663,000	22,091,000	22,138,800	166,100	170,500	172,300
Households	6,458,000	7,325,000	7,412,300	49,500	51,300	52,000
Employment	8,414,000	9,441,000	9,871,500	74,300	82,300	88,400

MITIGATION MEASURES

SCAG staff recommends that you review the Final Program Environmental Impact Report (Final PEIR) for the 2016 RTP/SCS for guidance, as appropriate. SCAG's Regional Council certified the Final PEIR and adopted the associated Findings of Fact and a Statement of Overriding Considerations (FOF/SOC) and Mitigation Monitoring and Reporting Program (MMRP) on April 7, 2016 (please see: http://scagrtpscs.net/Pages/FINAL2016PEIR.aspx). The Final PEIR includes a list of project-level performance standards-based mitigation measures that may be considered for adoption and implementation by lead, responsible, or trustee agencies in the region, as applicable and feasible. Project-level mitigation measures are within responsibility, authority, and/or jurisdiction of project-implementing agency or other public agency serving as lead agency under CEQA in subsequent project- and site- specific design, CEQA review, and decision-making processes, to meet the performance standards for each of the CEQA resource categories.

JASON E. UHLEY
General Manager-Chief Engineer

1995 MARKET STREET
RIVERSIDE, CA 92501
951.955.1200
FAX 951.788.9965
www.rcflood.org

RIVERSIDE COUNTY FLOOD CONTROL
AND WATER CONSERVATION DISTRICT

228348

RECEIVED
NOV 27 2019
COMMUNITY DEVELOPMENT DEPT.

November 21, 2019

City of Corona
Planning Department
Post Office Box 940
Corona, CA 92882-0940

Attention: Sandra Yang

Re: GPA 2019-0002, SPA 2019-0005,
Parcel Map 37788 and PP 2019-0008

The Riverside County Flood Control and Water Conservation District (District) does not usually review land divisions/land use cases or provide State Division of Real Estate letters/flood hazard reports for projects that are located within incorporated cities. Exceptions are made for cases with items of specific interest to the District including District Master Drainage Plan facilities, other regional flood control and drainage facilities which could be considered a logical component or extension of a master plan system, and District Area Drainage Plan fees (development mitigation fees).

The District's review is based on the above-referenced project transmittal, November 12, 2019. The District **has not** reviewed the proposed project in detail, and the following comments do not in any way constitute or imply District approval or endorsement of the proposed project with respect to flood hazard, public health and safety, or any other such issue:

☒ This project would not be impacted by District Master Drainage Plan facilities, nor are other facilities of regional interest proposed.

☐ This project involves District proposed Master Drainage Plan facilities, namely, _____. The District will accept ownership of such facilities on written request of the City. Facilities must be constructed to District standards, and District plan check and inspection will be required for District acceptance. Plan check, inspection, and administrative fees will be required.

☐ This project proposes channels, storm drains 36 inches or larger in diameter, or other facilities that could be considered regional in nature and/or a logical extension of an existing District's facility. The District would consider accepting ownership of such facilities on written request from the City. Facilities must be constructed to District standards, and District plan check and inspection will be required for District acceptance. Plan check, inspection, and administrative fees will be required.

☐ An encroachment permit shall be obtained for any construction related activities occurring within District right of way or facilities, namely, _____. For further information, contact the District's Encroachment Permit Section at 951.955.1266.

☐ The District's previous comments are still valid.

November 21, 2019

City of Corona
Re: GPA 2019-0002, SPA 2019-0005,
Parcel Map 37788 and PP 2019-0008

228348

GENERAL INFORMATION

This project may need to obtain an applicable National Pollutant Discharge Elimination System (NPDES) permit coverage from the State Water Resources Control Board or the California Regional Water Quality Control Board. Clearance for grading, recordation, or other final approval should not be given until the City has determined that the project has been granted a permit or is shown to be exempt.

If this project involves a Federal Emergency Management Agency (FEMA) mapped floodplain, then the City should require the applicant to provide all studies, calculations, plans, and other information required to meet FEMA requirements, and should further require that the applicant obtain a Conditional Letter of Map Revision (CLOMR) prior to grading, recordation, or other final approval of the project and a Letter of Map Revision (LOMR) prior to occupancy.

If a natural watercourse or mapped floodplain is impacted by this project, the City should require the applicant to obtain a Section 1601/1603 Agreement from the California Department of Fish and Wildlife and a Clean Water Act Section 404 Permit from the U.S. Army Corps of Engineers, or written correspondence from these agencies indicating the project is exempt from these requirements. A Clean Water Act Section 401 Water Quality Certification may be required from the local California Regional Water Quality Control Board prior to issuance of the Corps 404 permit.

Very truly yours,

Deborah de Chambeau

DEBORAH DE CHAMBEAU
Engineering Project Manager

c: Riverside County Planning Department
Attn: Jason Killebrew

SLJ:blm

APPENDIX B-1:

Bedford Marketplace Air Quality and Greenhouse Gas Memorandum

This Page Intentionally Left Blank

URBAN CROSSROADS

260 E. Baker St. | Suite 200 | Costa Mesa, CA 92626 | (949) 660-1994
urbanxroads.com

November 26, 2019

Mr. Glen Powels
Guardian Capital
5780 Fleet Street, Suite 225
Carlsbad, CA 92008

SUBJECT: BEDFORD MARKETPLACE AIR QUALITY AND GREENHOUSE GAS MEMORANDUM

Dear Mr. Glen Powels:

The purpose of this memorandum is to determine the potential air quality and greenhouse gas (GHG) impacts associated with the development of the proposed Bedford Marketplace ("Project") an expansion of the previously approved commercial development area included within the Arantine Hills Specific Plan. The 80,000 square feet (sf) of commercial retail use included in the Arantine Hills Specific Plan was evaluated in prior studies prepared for amendments to the Arantine Hills Specific Plan. The proposed Project represents the expansion of Bedford Marketplace from 80,000 sf to 135,000 sf of retail uses and a 135-room hotel. Consistent with the *Bedford Marketplace Traffic Study* prepared by Urban Crossroads, Inc., the incremental expansion of Bedford Marketplace constitutes the "Project" analyzed in this study (1). Reference to "Bedford Marketplace" includes the total development of the center, equal to the combination of the proposed Project and the previously approved 80,000 sf in the Arantine Hills Specific Plan. Based on the currently approved commercial trip generation in the *Arantine Hills Traffic Assessment* (November 2018), the Project is anticipated to generate an additional 2,061 external trips per day.

SITE LOCATION

The Project site is located south of Eagle Glen Parkway – Cajalco Road and west of the I-15 Freeway in the City of Riverside as shown on Exhibit A. The Project site is currently vacant. Nearby existing residential land uses are located north, west, and south of the Project site. Commercial land uses near the Project site are located to the north at the I-15 Freeway southbound off-ramp, and east of the I-15 Freeway north of Cajalco Road. The Corona Municipal Airport is located approximately 6.5 miles northwest of the Project site.

BEDFORD MARKETPLACE LAND USE DESCRIPTION

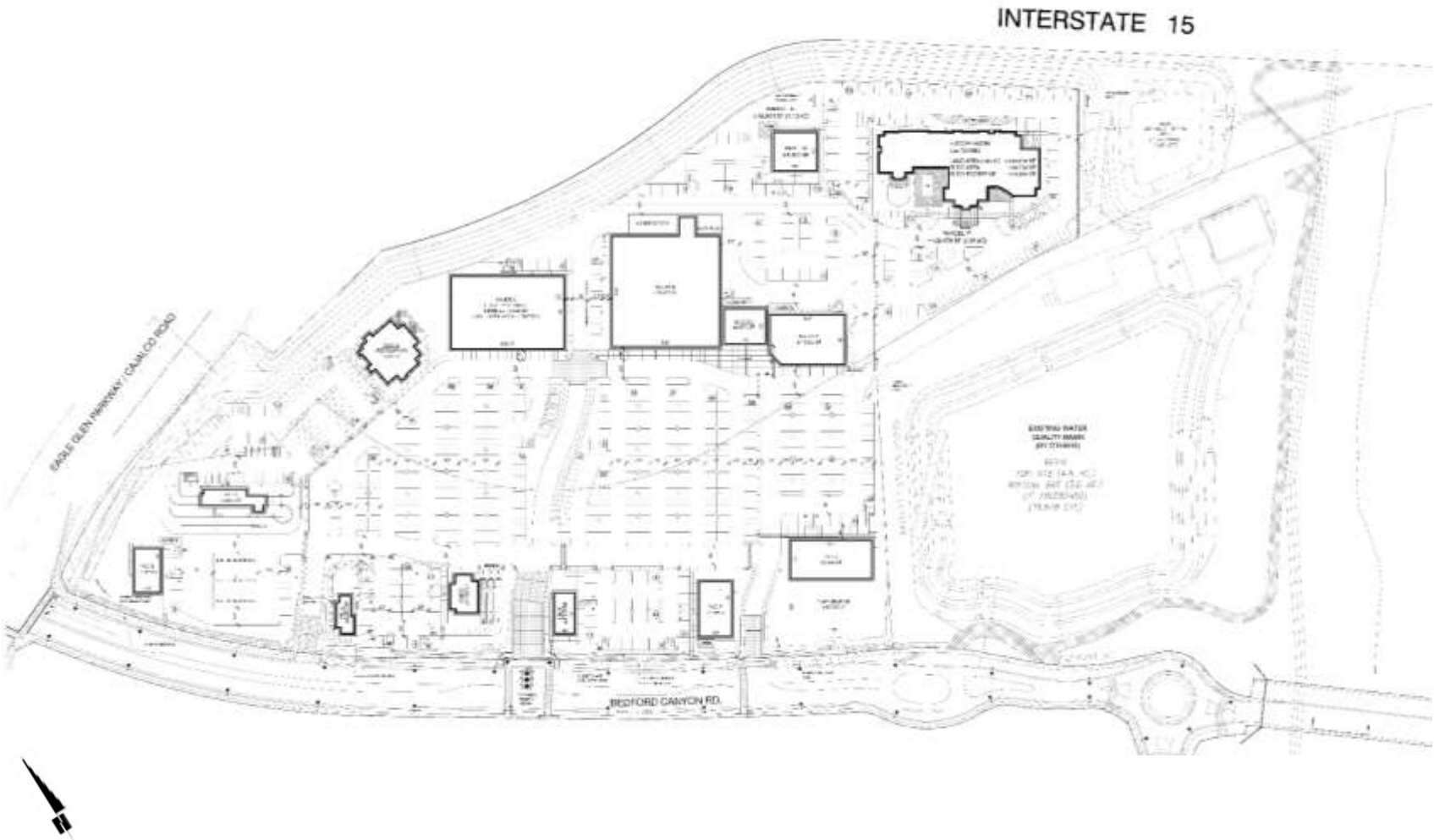
The Bedford Marketplace site plan (shown on Exhibit B) expands the approved commercial site and is proposed to consist of the following uses:

- Hotel - 135 rooms
- Health/fitness club - 38,000 sf
- Day Care Center - 9,990 sf
- Retail Shopping Center – 51,000 sf
- Bank – 6,562 sf
- Restaurant – 21,230 sf
- Gas Station – 18-vehicle fueling positions (vfp)
- Automated Car Wash – 3,600 sf

EXHIBIT A: LOCATION MAP



EXHIBIT B: BEDFORD MARKETPLACE SITE PLAN



PROJECT AIR QUALITY IMPACT ANALYSIS

CONSTRUCTION EMISSIONS

Construction activities associated with the Project would result in emissions of carbon monoxide (CO), Volatile Organic Compounds (VOCs), Nitrogen Oxides (NO_X), Sulfur Oxides (SO_X), particulate matter ≤ 10 microns (PM_{10}), and particulate matter ≤ 2.5 microns ($PM_{2.5}$). The duration of construction activity was based on the 2021 Opening Year. The construction schedule utilized in the analysis, shown in Table 1, represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as time passes and the analysis year increases due to emission regulations becoming more stringent.[1]

TABLE 1: CONSTRUCTION DURATION

Phase Name	Start Date	End Date	Days
Dirt Import Process			
Import Activities	01/01/2020	06/24/2020	126
Grading	01/01/2020	06/24/2020	126
Construction Process			
Site Preparation	06/25/2020	07/08/2020	10
Grading	07/09/2020	08/26/2020	35
Building Construction	08/27/2020	12/29/2021	350
Paving	12/02/2021	12/29/2021	20
Architectural Coating	12/02/2021	12/29/2021	20

Grading Activities

The activities associated with the Project are intended to bring the Modified Bedford Marketplace Project Site up to an elevation similar (within five feet) of the existing 10-acre commercial pad, import of approximately 440,000 cubic yards of dirt is required. The import operation is expected to include 232 full loads per night, assuming 15 cubic yards per load, for a total of 3,500 cubic yards per night. To import 440,000 cubic yards, approximately 126 nights of import would be required.

The Applicant proposes to import dirt during the hours (8 pm to 4 am) and complete grading operations both during daytime and nighttime hours. A source of import has been identified from the FST Sand and Gravel Mine, located east of the I-15 Freeway as shown on Exhibit C.

[1] As shown in the CalEEMod User's Guide Version 2016.3.2, Section 4.3 "OFFROAD Equipment" as the analysis year increases, emission factors for the same equipment pieces decrease due to the natural turnover of older equipment being replaced by newer less polluting equipment and new regulatory requirements.

EXHIBIT C: SOIL IMPORT/EXPORT HAUL TRUCK ROUTE



EXHIBIT D: PHASE 2B BORROW SITE LOCATION



The dirt would be hauled from the borrow site on Minnesota Road to Sherborn Street to Magnolia Avenue to the I-15 Freeway southbound on ramp at Magnolia Avenue, exit at Cajalco Road and enter the Modified Project Site by crossing Cajalco Road from the southbound off-ramp with traffic control. Trucks would return onto Cajalco Road, enter I-15 Freeway northbound to Magnolia Avenue to Sherborn Street and travel south to the borrow site for a total haul route distance (one-way) of approximately 5 miles. Notwithstanding, in the event that other borrow sites may be utilized, the analysis herein assumes a haul route distance (one-way) of up to 6.0 miles as a conservative measure.

Additionally, there is potential that dirt may be obtained from the adjacent Arantine Hills Specific Plan Phase 2B borrow site. As such, the applicant has identified two potential borrow sites to provide the necessary fill dirt. The FST Sand and Gravel Mine, located east of the I-15 Freeway and the Arantine Hills Specific Plan, as shown on Exhibit C and the Phase 2B site as shown on Exhibit D. It should be noted that if the Phase 2B site is utilized as a borrow site, dirt from Phase 2B would be pushed via scrapers as part of the grading equipment identified below and would not be hauled by truck. As such, no additional impacts beyond what is already identified herein would occur if the dirt were to be obtained from Phase 2B.

The associated construction equipment was generally based on information provided by the Project Applicant and CalEEMod defaults. A detailed summary of construction equipment assumptions by phase is provided at Table 2.

TABLE 2: CONSTRUCTION EQUIPMENT

Activity	Equipment	Amount	Hours Per Day
Dirt Import Process			
Import	Water Truck	1	8
	Street Sweeper	1	8
	Rubber Tired Dozers	1	8
	Tractors/Loaders/Backhoes	1	8
Grading	Water Truck	1	8
	Rubber Tired Dozers	1	8
	Scrapers	3	8
Construction Process			
Site Preparation	Rubber Tired Dozers	3	8
	Tractors/Loaders/Backhoes	4	8
Grading	Excavators	2	8
	Graders	1	8
	Rubber Tired Dozers	1	8

	Scrapers	2	8
	Tractors/Loaders/Backhoes	2	8
Building Construction	Cranes	1	8
	Forklifts	3	8
	Generator Sets	1	8
	Tractors/Loaders/Backhoes	3	8
	Welders	1	8
Paving	Pavers	2	8
	Paving Equipment	2	8
	Rollers	2	8
Architectural Coating	Air Compressors	1	8

REGIONAL CONSTRUCTION EMISSIONS SUMMARY

Without Mitigation

The estimated maximum daily regional construction emissions are summarized on Table 3. Detailed construction model outputs are presented in Attachment A. Under the assumed scenarios, emissions resulting from the Project construction would exceed criteria pollutant thresholds established by the SCAQMD for emissions of NO_X during hauling activity associated with dirt import activity.

TABLE 3: PROJECT REGIONAL CONSTRUCTION EMISSIONS SUMMARY (WITHOUT MITIGATION)

Phase	Emissions (lbs/day)					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Summer						
2020 (Dirt Import Process)	8.86	149.11	54.15	0.26	12.89	6.75
2020 (Construction Process)	4.97	50.27	39.65	0.12	10.89	6.11
2021 (Construction Process)	65.75	50.91	58.59	0.15	8.57	3.57
Winter						
2020 (Dirt Import Process)	8.99	147.70	56.45	0.25	12.90	6.75
2020 (Construction Process)	5.00	50.27	36.91	0.11	10.89	6.11
2021 (Construction Process)	65.78	50.83	55.33	0.15	8.57	3.57
Maximum Daily Emissions	**65.78**	**149.11**	**58.59**	**0.26**	**12.90**	**6.75**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**YES**	**NO**	**NO**	**NO**	**NO**

Recommended Mitigation Measure

MM AQ-1

When using construction equipment greater than 150 horsepower (>150 HP) during dirt import/hauling activity, the Construction Contractor shall ensure that off-road diesel construction equipment complies with Environmental Protection Agency (EPA)/California Air Resources Board (CARB) Tier 4 emission standards or equivalent and shall ensure that all construction equipment is turned and maintained in accordance with the manufacturer's specifications.

With Mitigation

The estimated maximum daily regional construction emissions are summarized on Table 4 with implementation of MM AQ-1. Detailed construction model outputs are presented in Attachment B. After implementation of MM AQ-1, Project construction-source emissions of NO_X would not exceed the applicable SCAQMD thresholds. Thus, a less than significant impact would occur for Project-related construction-source emission.

TABLE 4: PROJECT REGIONAL CONSTRUCTION EMISSIONS SUMMARY (WITH MITIGATION)

Phase	Emissions (lbs/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Summer						
2020 (Dirt Import Process)	4.49	94.52	51.69	0.26	10.51	4.56
2020 (Construction Process)	4.59	34.09	40.13	0.12	9.27	4.62
2021 (Construction Process)	65.41	46.37	59.21	0.15	8.39	3.39
Winter						
2020 (Dirt Import Process)	4.62	93.11	53.99	0.25	10.51	4.57
2020 (Construction Process)	4.62	34.03	37.39	0.11	9.27	4.62
2021 (Construction Process)	65.44	46.29	55.95	0.15	8.39	3.40
Maximum Daily Emissions	**65.44**	**94.52**	**59.21**	**0.26**	**10.51**	**4.62**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

OPERATIONAL EMISSIONS

Operational activities associated with the Project would result in emissions of CO, VOCs, NO_X, SO_X, PM_{10}, and $PM_{2.5}$. Operational related emissions are expected from the following primary sources: area source emissions, energy source emissions, mobile source emissions, and on-site equipment emissions.

Area Source Emissions

Architectural Coatings – Over a period of time, the buildings that are part of this Project will be subject to emissions resulting from the evaporation of solvents contained in paints, varnishes, primers, and other surface coatings as part of Project maintenance. The emissions associated with architectural coatings were calculated using the CalEEMod.

Consumer Products – Consumer products include, but are not limited to detergents, cleaning compounds, polishes, personal care products, and lawn and garden products. Many of these products contain organic compounds which when released in the atmosphere can react to form ozone and other photochemically reactive pollutants. The emissions associated with use of consumer products were calculated based on defaults provided within CalEEMod.

Landscape Maintenance Equipment – Landscape maintenance equipment would generate emissions from fuel combustion and evaporation of unburned fuel. Equipment in this category would include lawnmowers, shedders/grinders, blowers, trimmers, chain saws, and hedge trimmers used to maintain the landscaping of the Project. The emissions associated with landscape maintenance equipment were calculated based on assumptions provided in CalEEMod.

Energy Source Emissions

Combustion Emissions Associated with Natural Gas and Electricity – Electricity and natural gas are used by almost every project. Criteria pollutant emissions are emitted through the generation of electricity and consumption of natural gas. However, because electrical generating facilities for the Project area are located either outside the region (state) or offset through the use of pollution credits (RECLAIM) for generation within the SCAB, criteria pollutant emissions from offsite generation of electricity is generally excluded from the evaluation of significance and only natural gas use is considered. The emissions associated with natural gas use were calculated using CalEEMod.

Title 24 Energy Efficiency Standards – California's Energy Efficiency Standards for Residential and Nonresidential Buildings was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity. The 2019 version of Title 24 was adopted by the CEC and will become effective on January 1, 2020. As a conservative measure, the analysis herein assumes compliance with the 2016 Title 24 Standards and no additional reduction for compliance with the 2019 standards have been taken.

Mobile Source Emissions

Project mobile source emissions impacts are primarily dependent overall daily vehicle trip generation. According to the *Bedford Marketplace Traffic Study*, the Project is anticipated to generate an additional 2,061 external trips per day (1).

REGIONAL OPERATIONAL EMISSIONS SUMMARY

Table 5 summarizes the Project's daily regional emissions from on-going operations. Detailed operational model outputs are presented in Attachment B. As shown, during operational activity, the net increase in emissions associated with Project-related activity would not exceed the SCAQMD regional thresholds of significance for emissions of any criteria pollutant.

TABLE 5: OPERATIONAL EMISSIONS SUMMARY (BEDFORD MARKETPLACE VS. 80 TSF COMMERCIAL USES)

Operational Activities – Summer Scenario	**Emissions (lbs/day)**					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Bedford Marketplace Maximum Daily Emissions	45.50	106.89	206.50	0.48	36.83	10.50
80 TSF Commercial Maximum Daily Emissions	12.97	67.29	99.94	0.36	24.08	6.61
Net Increase	***32.54***	***39.61***	***106.56***	***0.12***	***12.75***	***3.89***
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**
Operational Activities – Winter Scenario	**Emissions (lbs/day)**					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Bedford Marketplace Maximum Daily Emissions	42.24	109.60	194.87	0.46	36.83	10.50
80 TSF Commercial Maximum Daily Emissions	11.42	66.73	91.31	0.33	24.08	6.61
Net Increase	***30.82***	***42.87***	***103.56***	***0.12***	***12.74***	***3.89***
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

LOCALIZED CONSTRUCTION EMISSIONS SUMMARY

The analysis makes use of methodology included in the SCAQMD *Final Localized Significance Threshold Methodology* (LST Methodology) (2). The SCAQMD has established that impacts to air quality are significant if there is a potential to contribute or cause localized exceedances of the federal and/or state ambient air quality standards (NAAQS/CAAQS). Collectively, these are referred to as Localized Significance Thresholds (LSTs). The SCAQMD established LSTs in response to the SCAQMD Governing Board's Environmental Justice Initiative I-4[2]. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard at the sensitive receptor. The SCAQMD states that lead agencies can use the LSTs as another indicator of significance in its air quality impact analyses.

Sensitive Receptors

Receptor locations are off-site locations where individuals may be exposed to emissions from Project activities. This Memorandum analyzes localized construction and operational emissions impacts at the nearest sensitive receptors.

Residential Receptors – Some people are especially sensitive to air pollution and are given special consideration when evaluating air quality impacts from projects. These groups of people include children, the elderly, individuals with pre-existing respiratory or cardiovascular illness, and athletes and others who engage in frequent exercise. Structures that house these persons or places where they gather to exercise are defined as "sensitive receptors". These structures typically include residences, hotels, hospitals, etc. as they are also known to be locations where an individual can remain for 24 hours. Consistent with the *LST Methodology*, the nearest land use where an individual could remain for 24 hours to the Project site (in this case the nearest residential land use) has been used to determine construction and operational air quality impacts for emissions of PM_{10} and $PM_{2.5}$, since PM_{10} and $PM_{2.5}$ thresholds are based on a 24 hour averaging time.

Non-Residential Receptors – As per the *LST Methodology*, commercial and industrial facilities are not included in the definition of sensitive receptor because employees do not typically remain onsite for a full 24 hours but are typically onsite for 8 hours. However, it should be noted that the *LST Methodology* explicitly states that "*LSTs based on shorter averaging periods, such as the NO_2 and CO LSTs, could also be applied to receptors such as industrial or commercial facilities since it is reasonable to assume that a worker at these sites could be present for periods of one to eight hours* (2)." Consistent with the SCAQMD's Final LST Methodology, the nearest industrial or commercial use to the Project site will be used to determine operational and construction air impacts for emissions of NO_2 and CO. Receptors in the Project study area are shown on Exhibit E as they relate to the Project site and potential Phase 2B borrow site.

[2] The purpose of SCAQMD's Environmental Justice program is to ensure that everyone has the right to equal protection from air pollution and fair access to the decision-making process that works to improve the quality of air within their communities. Further, the SCAQMD defines Environmental Justice as "…equitable environmental policymaking and enforcement to protect the health of all residents, regardless of age, culture, ethnicity, gender, race, socioeconomic status, or geographic location, from the health effects of air pollution."

EXHIBIT E: RECEPTOR LOCATIONS



The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Project's potential to cause an individual and cumulatively significant impact. As such, the nearest sensitive receptor for evaluation of localized PM_{10} and $PM_{2.5}$ emissions are the existing residential homes represented by R4, R5, and R6 which are located 20 feet/ 6 meters east from the Project site. It should be noted that he *LST Methodology* explicitly states that "*It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters* (2)." As such, a 25-meter receptor distance will be utilized as a screening threshold to determine LSTs for emissions of PM_{10} and $PM_{2.5}$. For evaluation of localized NO_X and CO emissions, the same 25-meter distance used for evaluation of localized PM_{10} and $PM_{2.5}$ emissions will be utilized as an individual can remain at these locations for an 8-hour period.

Table 6 identifies the localized impacts at the nearest receptor location in the vicinity of the Project. Outputs from the model runs for construction LSTs are provided in Attachment A. Under the assumed scenarios, emissions resulting from the Project construction will not exceed the numerical thresholds of significance established by the SCAQMD for any criteria pollutant. Thus, a less than significant impact would occur for localized Project-related construction-source emissions and no mitigation is required.

TABLE 6: PROPOSED PROJECT LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION

On-Site Dirt Import Process – Site Preparation	**Emissions (lbs/day)**			
	NO_X	**CO**	**PM_{10}**	**$PM_{2.5}$**
Maximum Daily Emissions	**24.99**	**14.34**	**4.11**	**2.46**
SCAQMD Localized Threshold	149	1,016	35	10
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**
On-Site Dirt Import Process - Grading	**Emissions (lbs/day)**			
	NO_X	**CO**	**PM_{10}**	**$PM_{2.5}$**
Maximum Daily Emissions	**52.91**	**30.32**	**5.96**	**3.43**
SCAQMD Localized Threshold	252	1,997	43	14
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**
Construction Process – Site Preparation	**Emissions (lbs/day)**			
	NO_X	**CO**	**PM_{10}**	**$PM_{2.5}$**
Maximum Daily Emissions	**42.41**	**21.51**	**10.69**	**6.05**
SCAQMD Localized Threshold	252	1,997	49	15
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**
Construction Process - Grading	**Emissions (lbs/day)**			
	NO_X	**CO**	**PM_{10}**	**$PM_{2.5}$**
Maximum Daily Emissions	**50.20**	**31.96**	**6.18**	**3.47**
SCAQMD Localized Threshold	269	2,165	52	16
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**

LOCALIZED OPERATIONAL EMISSIONS SUMMARY

The proposed project involves the construction and operation 135,000 sf of retail uses and a 135-room hotel. According to SCAQMD LST methodology, LSTs would apply to the operational phase of a proposed project, if the project includes stationary sources, or attracts mobile sources that may spend long periods queuing and idling at the site (e.g., warehouse or transfer facilities). The proposed project does not include such uses, and thus, due to the lack of stationary source emissions, no long-term localized significance threshold analysis is needed.

GREENHOUSE GAS EMISSIONS

As shown on Table 7, the Project would generate a total of approximately 8,537.89 $MTCO_2e$ per year. The net increase in GHG emissions is estimated to be 3,325.07 $MTCO_2e$ per year. Notwithstanding, the Project will be required to adhere to and implement a minimum of 100 points pursuant to the City of Corona's Climate Action Plan (CAP). Detailed model outputs are presented in Attachment C for the Project.

TABLE 7: PROPOSED PROJECT GHG EMISSIONS

Emission Source	Emissions (MT/yr)
	Total CO_2e
Bedford Marketplace	**8,537.89**
80 TSF Commercial	**5,212.83**
Net Increase	***3,325.07***

MT/yr = metric tons per year

CONCLUSIONS

Based on the preceding, the Project is not anticipated to result in any new impacts as compared to the Currently Approved Project as previously analyzed.

If you have any questions, please contact me directly at (949) 336-5987.

Respectfully submitted,

URBAN CROSSROADS, INC.



Haseeb Qureshi,
Associate Principal

REFERENCES

1. **Urban Crossroads, Inc.** *Bedford Marketplace Traffic Study.* 2019.
2. **South Coast Air Quality Management District.** *Localized Significance Thresholds Methodology.* s.l. : South Coast Air Quality Managment District, 2003.

ATTACHMENT A

PROPOSED PROJECT CALEEMOD CONSTRUCTION EMISSIONS MODEL OUTPUTS

Bedford Marketplace (Dirt Import Process - Unmitigated)

San Bernardino-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Bank (with Drive-Through)	6.00	1000sqft	0.14	6,000.00	0
Day-Care Center	9.99	1000sqft	0.23	9,990.00	0
Other Asphalt Surfaces	408.85	1000sqft	9.39	408,852.00	0
Parking Lot	890.00	Space	8.17	356,000.00	0
Health Club	38.00	1000sqft	0.87	38,000.00	0
High Turnover (Sit Down Restaurant)	5.83	1000sqft	0.13	5,826.00	0
Hotel	135.00	Room	0.57	88,730.00	0
Quality Restaurant	13.20	1000sqft	0.30	13,200.00	0
User Defined Recreational	2.20	User Defined Unit	0.05	2,200.00	0
Automobile Care Center	3.60	1000sqft	0.08	3,600.00	0
Gasoline/Service Station	18.00	Pump	0.09	4,000.00	0
Regional Shopping Center	51.00	1000sqft	1.17	51,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Net Land Area per the Site Plan is +/-21.2 acres.

Construction Phase - The Dirt Import Process anticipated to 126 days.

Off-road Equipment - Hours are based on an 8-hour workday.

Off-road Equipment - Equipment adjusted per information provided by the Project Applicant.

Off-road Equipment - Equipment adjusted per information provided by the Project Applicant.

Trips and VMT - Hauling trips based on the amount of import and the 15 cubic yard hauling capacity.

Grading - For purposes of analysis, total acres graded per day is based on the equipment specific grading rates (CalEEMod Appendix A) and the equipment list.

Architectural Coating -

Vehicle Trips - Construction Run Only.

Energy Use - Construction Run Only.

Water And Wastewater - Construction Run Only.

Solid Waste - Construction Run Only.

Construction Off-road Equipment Mitigation - Rule 403

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	35.00	126.00
tblConstructionPhase	NumDays	10.00	126.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	3.03	0.00
tblEnergyUse	LightingElect	2.93	0.00

tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	6.62	0.00
tblEnergyUse	LightingElect	5.44	0.00
tblEnergyUse	LightingElect	0.35	0.00
tblEnergyUse	LightingElect	6.62	0.00
tblEnergyUse	LightingElect	5.61	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	1.49	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	28.48	0.00
tblEnergyUse	NT24E	6.23	0.00
tblEnergyUse	NT24E	28.48	0.00
tblEnergyUse	NT24E	2.44	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	1.79	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	195.77	0.00
tblEnergyUse	NT24NG	4.86	0.00
tblEnergyUse	NT24NG	195.77	0.00
tblEnergyUse	NT24NG	0.30	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	2.78	0.00

tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	12.38	0.00
tblEnergyUse	T24E	6.47	0.00
tblEnergyUse	T24E	12.38	0.00
tblEnergyUse	T24E	4.58	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	6.97	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	77.67	0.00
tblEnergyUse	T24NG	55.15	0.00
tblEnergyUse	T24NG	77.67	0.00
tblEnergyUse	T24NG	1.92	0.00
tblGrading	AcresOfGrading	378.00	441.00
tblGrading	AcresOfGrading	0.00	126.00
tblGrading	MaterialExported	0.00	440,000.00
tblLandUse	LandUseSquareFeet	408,850.00	408,852.00
tblLandUse	LandUseSquareFeet	5,830.00	5,826.00
tblLandUse	LandUseSquareFeet	196,020.00	88,730.00
tblLandUse	LandUseSquareFeet	0.00	2,200.00
tblLandUse	LandUseSquareFeet	2,541.15	4,000.00
tblLandUse	LotAcreage	8.01	8.17
tblLandUse	LotAcreage	4.50	0.57
tblLandUse	LotAcreage	0.00	0.05
tblLandUse	LotAcreage	0.06	0.09

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblSolidWaste	SolidWasteGenerationRate	13.75	0.00
tblSolidWaste	SolidWasteGenerationRate	5.60	0.00
tblSolidWaste	SolidWasteGenerationRate	12.99	0.00
tblSolidWaste	SolidWasteGenerationRate	9.70	0.00
tblSolidWaste	SolidWasteGenerationRate	216.60	0.00
tblSolidWaste	SolidWasteGenerationRate	69.38	0.00
tblSolidWaste	SolidWasteGenerationRate	73.91	0.00
tblSolidWaste	SolidWasteGenerationRate	12.04	0.00
tblSolidWaste	SolidWasteGenerationRate	53.55	0.00
tblTripsAndVMT	HaulingTripLength	20.00	6.00
tblTripsAndVMT	HaulingTripNumber	55,000.00	58,668.00
tblVehicleEF	HHD	1.24	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	3.46	7.82
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.92	2.4420e-003
tblVehicleEF	HHD	6,983.95	1,459.93
tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.07	7.65

tblVehicleEF	HHD	2.87	3.24
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004
tblVehicleEF	HHD	0.89	0.60
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	2.4200e-004	6.3700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004
tblVehicleEF	HHD	1.02	0.68
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4200e-004	6.3700e-004

tblVehicleEF	HHD	0.07	1.0000e-006
tblVehicleEF	HHD	1.17	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	2.52	7.65
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.80	2.2950e-003
tblVehicleEF	HHD	7,395.94	1,453.32
tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.97	7.40
tblVehicleEF	HHD	2.70	3.05
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	1.8400e-004	9.0000e-006
tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.84	0.62
tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.09	0.09

tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.7000e-005	0.00
tblVehicleEF	HHD	1.8400e-004	9.0000e-006
tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.97	0.71
tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	1.34	0.03
tblVehicleEF	HHD	0.04	3.7740e-003
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	4.76	7.98
tblVehicleEF	HHD	0.58	0.36
tblVehicleEF	HHD	1.89	2.4140e-003
tblVehicleEF	HHD	6,415.00	1,454.79
tblVehicleEF	HHD	1,493.95	1,371.01
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	26.84	7.90
tblVehicleEF	HHD	2.83	3.15
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05

tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.8160e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004
tblVehicleEF	HHD	0.96	0.56
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.08
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.06	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004
tblVehicleEF	HHD	1.10	0.64
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.09
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.07	1.0000e-006
tblVehicleEF	LDA	4.6640e-003	2.7950e-003
tblVehicleEF	LDA	6.4640e-003	0.06
tblVehicleEF	LDA	0.62	0.70
tblVehicleEF	LDA	1.32	2.22

tblVehicleEF	LDA	261.85	269.33
tblVehicleEF	LDA	59.28	55.48
tblVehicleEF	LDA	0.06	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.6230e-003	2.6640e-003
tblVehicleEF	LDA	6.1500e-004	5.4900e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.10	0.27
tblVehicleEF	LDA	5.3170e-003	3.2030e-003
tblVehicleEF	LDA	5.3900e-003	0.05
tblVehicleEF	LDA	0.76	0.86
tblVehicleEF	LDA	1.10	1.85
tblVehicleEF	LDA	286.52	294.16
tblVehicleEF	LDA	59.28	54.75

tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.07	0.21
tblVehicleEF	LDA	2.8710e-003	2.9100e-003
tblVehicleEF	LDA	6.1100e-004	5.4200e-004
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.08	0.23
tblVehicleEF	LDA	4.5320e-003	2.7260e-003
tblVehicleEF	LDA	6.4200e-003	0.06
tblVehicleEF	LDA	0.58	0.67
tblVehicleEF	LDA	1.30	2.19
tblVehicleEF	LDA	256.02	263.51
tblVehicleEF	LDA	59.28	55.41
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003

tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.25
tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.5640e-003	2.6070e-003
tblVehicleEF	LDA	6.1500e-004	5.4800e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.25
tblVehicleEF	LDA	0.09	0.27
tblVehicleEF	LDT1	0.02	8.1890e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.71	1.63
tblVehicleEF	LDT1	4.02	2.54
tblVehicleEF	LDT1	323.73	319.09
tblVehicleEF	LDT1	72.77	67.44
tblVehicleEF	LDT1	0.18	0.15
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003

tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.29	0.48
tblVehicleEF	LDT1	3.2600e-003	3.1580e-003
tblVehicleEF	LDT1	7.9900e-004	6.6700e-004
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.06	0.05
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT1	0.02	9.2860e-003
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	2.05	1.97
tblVehicleEF	LDT1	3.30	2.10
tblVehicleEF	LDT1	352.65	345.09
tblVehicleEF	LDT1	72.77	66.47
tblVehicleEF	LDT1	0.16	0.13
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.40	0.44

tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.24	0.41
tblVehicleEF	LDT1	3.5540e-003	3.4150e-003
tblVehicleEF	LDT1	7.8600e-004	6.5800e-004
tblVehicleEF	LDT1	0.40	0.44
tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.06	0.06
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.26	0.44
tblVehicleEF	LDT1	0.01	7.9980e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.62	1.55
tblVehicleEF	LDT1	3.95	2.49
tblVehicleEF	LDT1	316.91	312.93
tblVehicleEF	LDT1	72.77	67.36
tblVehicleEF	LDT1	0.17	0.14
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13

tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.28	0.48
tblVehicleEF	LDT1	3.1900e-003	3.0970e-003
tblVehicleEF	LDT1	7.9800e-004	6.6700e-004
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13
tblVehicleEF	LDT1	0.05	0.05
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT2	6.9330e-003	4.8260e-003
tblVehicleEF	LDT2	9.2890e-003	0.08
tblVehicleEF	LDT2	0.85	1.06
tblVehicleEF	LDT2	1.85	2.89
tblVehicleEF	LDT2	363.70	344.02
tblVehicleEF	LDT2	81.97	72.94
tblVehicleEF	LDT2	0.10	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50

tblVehicleEF	LDT2	0.13	0.38
tblVehicleEF	LDT2	3.6440e-003	3.4040e-003
tblVehicleEF	LDT2	8.5100e-004	7.2200e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.14	0.42
tblVehicleEF	LDT2	7.8730e-003	5.5090e-003
tblVehicleEF	LDT2	7.7350e-003	0.07
tblVehicleEF	LDT2	1.04	1.30
tblVehicleEF	LDT2	1.53	2.39
tblVehicleEF	LDT2	397.09	369.57
tblVehicleEF	LDT2	81.97	71.94
tblVehicleEF	LDT2	0.09	0.09
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	3.9810e-003	3.6570e-003

tblVehicleEF	LDT2	8.4600e-004	7.1200e-004
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.11	0.35
tblVehicleEF	LDT2	6.7430e-003	4.7100e-003
tblVehicleEF	LDT2	9.2200e-003	0.08
tblVehicleEF	LDT2	0.81	1.01
tblVehicleEF	LDT2	1.82	2.84
tblVehicleEF	LDT2	355.82	337.97
tblVehicleEF	LDT2	81.97	72.85
tblVehicleEF	LDT2	0.09	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.58
tblVehicleEF	LDT2	0.12	0.38
tblVehicleEF	LDT2	3.5650e-003	3.3440e-003
tblVehicleEF	LDT2	8.5100e-004	7.2100e-004
tblVehicleEF	LDT2	0.07	0.11

tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.08	0.58
tblVehicleEF	LDT2	0.14	0.41
tblVehicleEF	LHD1	5.4860e-003	4.9840e-003
tblVehicleEF	LHD1	0.01	7.1410e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.77	1.07
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.99
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.26	1.69
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.02

tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.29	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6200e-004	1.0900e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD1	5.4860e-003	5.0000e-003
tblVehicleEF	LHD1	0.01	7.3180e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.18	0.99
tblVehicleEF	LHD1	2.58	1.00
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.98
tblVehicleEF	LHD1	30.92	10.87
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.12	1.58
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003

tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.27	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0370e-003	6.3960e-003
tblVehicleEF	LHD1	3.5800e-004	1.0800e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.30	0.09
tblVehicleEF	LHD1	5.4860e-003	4.9870e-003
tblVehicleEF	LHD1	0.01	7.1590e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17

tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.72	1.05
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.96
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.22	1.66
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6100e-004	1.0800e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11

tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD2	3.8190e-003	3.4060e-003
tblVehicleEF	LHD2	5.2410e-003	4.5240e-003
tblVehicleEF	LHD2	9.1660e-003	0.01
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.29	0.64
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.51
tblVehicleEF	LHD2	24.89	7.96
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.69	1.81
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.01	0.02

tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7300e-004	7.9000e-005
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.14	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4160e-003
tblVehicleEF	LHD2	5.3190e-003	4.5750e-003
tblVehicleEF	LHD2	8.7380e-003	9.6870e-003
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.56	0.62
tblVehicleEF	LHD2	1.21	0.60
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.89
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.59	1.70
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01

tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7100e-004	7.8000e-005
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4070e-003
tblVehicleEF	LHD2	5.2490e-003	4.5300e-003
tblVehicleEF	LHD2	9.0820e-003	0.01
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.27	0.63

tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.94
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.67	1.78
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7200e-004	7.9000e-005
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.07	0.08

tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.16	0.25
tblVehicleEF	MCY	21.02	21.16
tblVehicleEF	MCY	9.91	8.77
tblVehicleEF	MCY	167.12	211.16
tblVehicleEF	MCY	46.87	61.87
tblVehicleEF	MCY	1.17	1.17
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84
tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.26	2.26
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.17	1.92
tblVehicleEF	MCY	2.0790e-003	2.0900e-003
tblVehicleEF	MCY	6.9500e-004	6.1200e-004
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84
tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.76	2.76
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.37	2.08

tblVehicleEF	MCY	0.41	0.32
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	21.14	21.29
tblVehicleEF	MCY	9.06	7.97
tblVehicleEF	MCY	167.12	211.14
tblVehicleEF	MCY	46.87	59.68
tblVehicleEF	MCY	0.99	0.99
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.19	2.19
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	1.87	1.64
tblVehicleEF	MCY	2.0790e-003	2.0890e-003
tblVehicleEF	MCY	6.7100e-004	5.9100e-004
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.69	2.68
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.03	1.78
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.15	0.24

tblVehicleEF	MCY	20.06	20.18
tblVehicleEF	MCY	9.53	8.41
tblVehicleEF	MCY	167.12	209.47
tblVehicleEF	MCY	46.87	61.06
tblVehicleEF	MCY	1.13	1.13
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.22	2.22
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.10	1.84
tblVehicleEF	MCY	2.0630e-003	2.0730e-003
tblVehicleEF	MCY	6.8600e-004	6.0400e-004
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.71	2.71
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.28	2.00
tblVehicleEF	MDV	0.01	6.6050e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.55	1.33
tblVehicleEF	MDV	3.59	3.53

tblVehicleEF	MDV	498.66	425.70
tblVehicleEF	MDV	110.76	90.07
tblVehicleEF	MDV	0.20	0.14
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.28	0.50
tblVehicleEF	MDV	5.0000e-003	4.2090e-003
tblVehicleEF	MDV	1.1710e-003	8.9100e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MDV	0.02	7.4780e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.87	1.60
tblVehicleEF	MDV	2.99	2.92
tblVehicleEF	MDV	542.90	452.84
tblVehicleEF	MDV	110.76	88.84

tblVehicleEF	MDV	0.18	0.12
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.24	0.42
tblVehicleEF	MDV	5.4470e-003	4.4780e-003
tblVehicleEF	MDV	1.1600e-003	8.7900e-004
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22
tblVehicleEF	MDV	0.06	0.05
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.26	0.46
tblVehicleEF	MDV	0.01	6.4310e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.47	1.25
tblVehicleEF	MDV	3.53	3.47
tblVehicleEF	MDV	488.33	419.25
tblVehicleEF	MDV	110.76	89.97
tblVehicleEF	MDV	0.19	0.13
tblVehicleEF	MDV	1.8680e-003	1.7260e-003

tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.13	0.61
tblVehicleEF	MDV	0.28	0.49
tblVehicleEF	MDV	4.8960e-003	4.1450e-003
tblVehicleEF	MDV	1.1700e-003	8.9000e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.13	0.61
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.60	0.37
tblVehicleEF	MH	6.96	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.64	4.70
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00

tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.2000e-004	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.44	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.74	0.37
tblVehicleEF	MH	6.31	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.50	4.42
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00

tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.37	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.0900e-004	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.41	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.61	0.37
tblVehicleEF	MH	6.87	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.61	4.62
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00

tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.1900e-004	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.43	0.00
tblVehicleEF	MHD	0.02	3.2250e-003
tblVehicleEF	MHD	4.1450e-003	6.0340e-003
tblVehicleEF	MHD	0.06	8.8310e-003
tblVehicleEF	MHD	0.33	0.34
tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	6.00	1.03
tblVehicleEF	MHD	155.10	71.06
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.43
tblVehicleEF	MHD	0.63	0.61

tblVehicleEF	MHD	1.08	2.22
tblVehicleEF	MHD	4.3700e-004	2.0190e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	4.1800e-004	1.9320e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.11
tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.4910e-003	6.7400e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4400e-004	8.3000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.11
tblVehicleEF	MHD	0.40	0.05
tblVehicleEF	MHD	0.02	3.0610e-003
tblVehicleEF	MHD	4.2290e-003	6.0860e-003
tblVehicleEF	MHD	0.05	8.4200e-003

tblVehicleEF	MHD	0.24	0.28
tblVehicleEF	MHD	0.32	0.56
tblVehicleEF	MHD	5.61	0.96
tblVehicleEF	MHD	164.29	72.29
tblVehicleEF	MHD	1,105.72	1,029.54
tblVehicleEF	MHD	53.92	8.32
tblVehicleEF	MHD	0.65	0.62
tblVehicleEF	MHD	1.01	2.09
tblVehicleEF	MHD	3.6900e-004	1.7050e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	3.5300e-004	1.6310e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.35	0.04
tblVehicleEF	MHD	1.5770e-003	6.8600e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.3800e-004	8.2000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02

tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.38	0.05
tblVehicleEF	MHD	0.02	3.4660e-003
tblVehicleEF	MHD	4.1530e-003	6.0380e-003
tblVehicleEF	MHD	0.06	8.7320e-003
tblVehicleEF	MHD	0.46	0.42
tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	5.90	1.02
tblVehicleEF	MHD	142.41	69.34
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.40
tblVehicleEF	MHD	0.60	0.60
tblVehicleEF	MHD	1.06	2.18
tblVehicleEF	MHD	5.3200e-004	2.4540e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	5.0900e-004	2.3480e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	7.0500e-004	3.2200e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.13

tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.3710e-003	6.5800e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4300e-004	8.3000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	7.0500e-004	3.2200e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.13
tblVehicleEF	MHD	0.39	0.05
tblVehicleEF	OBUS	0.01	9.3650e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.27	0.49
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.67	2.81
tblVehicleEF	OBUS	70.21	68.33
tblVehicleEF	OBUS	1,126.32	1,507.23
tblVehicleEF	OBUS	71.08	22.19
tblVehicleEF	OBUS	0.32	0.39
tblVehicleEF	OBUS	1.10	1.47
tblVehicleEF	OBUS	1.1300e-004	1.5090e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.0800e-004	1.4440e-003
tblVehicleEF	OBUS	5.1650e-003	0.02

tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.41	0.13
tblVehicleEF	OBUS	6.8200e-004	6.5300e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2800e-004	2.2000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	OBUS	0.01	9.3930e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.26	0.47
tblVehicleEF	OBUS	0.75	1.22
tblVehicleEF	OBUS	6.11	2.57
tblVehicleEF	OBUS	73.34	68.71
tblVehicleEF	OBUS	1,126.32	1,507.28
tblVehicleEF	OBUS	71.08	21.80

tblVehicleEF	OBUS	0.33	0.39
tblVehicleEF	OBUS	1.02	1.35
tblVehicleEF	OBUS	9.5000e-005	1.2750e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	9.1000e-005	1.2200e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.05	0.09
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.39	0.13
tblVehicleEF	OBUS	7.1200e-004	6.5600e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.1800e-004	2.1600e-004
tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.07	0.11
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.42	0.14
tblVehicleEF	OBUS	0.01	9.3640e-003
tblVehicleEF	OBUS	0.01	0.01

tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.28	0.51
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.62	2.79
tblVehicleEF	OBUS	65.88	67.80
tblVehicleEF	OBUS	1,126.32	1,507.24
tblVehicleEF	OBUS	71.08	22.15
tblVehicleEF	OBUS	0.31	0.39
tblVehicleEF	OBUS	1.08	1.44
tblVehicleEF	OBUS	1.3700e-004	1.8320e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.3100e-004	1.7520e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.41	0.13
tblVehicleEF	OBUS	6.4100e-004	6.4800e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2700e-004	2.1900e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03

tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3980e-003
tblVehicleEF	SBUS	0.07	3.9120e-003
tblVehicleEF	SBUS	5.64	1.82
tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.49	0.54
tblVehicleEF	SBUS	1,270.71	336.96
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.11
tblVehicleEF	SBUS	12.46	3.45
tblVehicleEF	SBUS	5.17	5.36
tblVehicleEF	SBUS	0.01	4.4720e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	4.2790e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004
tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.68	0.19

tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.28	0.02
tblVehicleEF	SBUS	0.01	3.2020e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004
tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.31	0.02
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.4900e-003
tblVehicleEF	SBUS	0.06	3.2450e-003
tblVehicleEF	SBUS	5.48	1.78
tblVehicleEF	SBUS	0.72	0.64
tblVehicleEF	SBUS	3.76	0.38
tblVehicleEF	SBUS	1,335.64	345.46
tblVehicleEF	SBUS	1,144.20	1,143.58
tblVehicleEF	SBUS	36.06	2.85
tblVehicleEF	SBUS	12.86	3.52
tblVehicleEF	SBUS	4.84	5.03
tblVehicleEF	SBUS	0.01	3.7780e-003
tblVehicleEF	SBUS	0.01	0.01

tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	3.6140e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003
tblVehicleEF	SBUS	0.67	0.19
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.23	0.02
tblVehicleEF	SBUS	0.01	3.2820e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.2700e-004	2.8000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003
tblVehicleEF	SBUS	0.96	0.27
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.25	0.02
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3930e-003
tblVehicleEF	SBUS	0.07	4.0100e-003
tblVehicleEF	SBUS	5.85	1.87

tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.54	0.56
tblVehicleEF	SBUS	1,181.05	325.23
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.14
tblVehicleEF	SBUS	11.91	3.35
tblVehicleEF	SBUS	5.09	5.28
tblVehicleEF	SBUS	0.02	5.4310e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.02	5.1960e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003
tblVehicleEF	SBUS	0.68	0.19
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.29	0.02
tblVehicleEF	SBUS	0.01	3.0910e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003

tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.32	0.03
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.79	32.64
tblVehicleEF	UBUS	14.93	1.46
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.41
tblVehicleEF	UBUS	6.43	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004
tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.19	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003

tblVehicleEF	UBUS	1.6230e-003	1.7200e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004
tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.30	0.08
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.08	0.02
tblVehicleEF	UBUS	9.90	32.64
tblVehicleEF	UBUS	12.23	1.20
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	16.98
tblVehicleEF	UBUS	5.98	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	0.02	3.2040e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	0.67	0.06
tblVehicleEF	UBUS	0.02	0.05

tblVehicleEF	UBUS	1.06	0.06
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.5760e-003	1.6800e-004
tblVehicleEF	UBUS	0.02	3.2040e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	2.69	4.28
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.16	0.07
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.80	32.64
tblVehicleEF	UBUS	14.43	1.42
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.36
tblVehicleEF	UBUS	6.31	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004

tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.17	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.6140e-003	1.7200e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004
tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.28	0.08
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TTP	48.00	0.00
tblVehicleTrips	CC_TTP	74.40	0.00
tblVehicleTrips	CC_TTP	82.30	0.00
tblVehicleTrips	CC_TTP	79.00	0.00

tblVehicleTrips	CC_TTP	64.10	0.00
tblVehicleTrips	CC_TTP	72.50	0.00
tblVehicleTrips	CC_TTP	61.60	0.00
tblVehicleTrips	CC_TTP	69.00	0.00
tblVehicleTrips	CC_TTP	64.70	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	5.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CW_TL	16.60	0.00

tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TTP	33.00	0.00
tblVehicleTrips	CW_TTP	6.60	0.00
tblVehicleTrips	CW_TTP	12.70	0.00
tblVehicleTrips	CW_TTP	2.00	0.00
tblVehicleTrips	CW_TTP	16.90	0.00
tblVehicleTrips	CW_TTP	8.50	0.00
tblVehicleTrips	CW_TTP	19.40	0.00
tblVehicleTrips	CW_TTP	12.00	0.00
tblVehicleTrips	CW_TTP	16.30	0.00
tblVehicleTrips	DV_TP	51.00	0.00
tblVehicleTrips	DV_TP	26.00	0.00
tblVehicleTrips	DV_TP	58.00	0.00
tblVehicleTrips	DV_TP	27.00	0.00
tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	DV_TP	20.00	0.00
tblVehicleTrips	DV_TP	38.00	0.00

tblVehicleTrips	DV_TP	18.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	PB_TP	28.00	0.00
tblVehicleTrips	PB_TP	47.00	0.00
tblVehicleTrips	PB_TP	14.00	0.00
tblVehicleTrips	PB_TP	59.00	0.00
tblVehicleTrips	PB_TP	9.00	0.00
tblVehicleTrips	PB_TP	43.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	44.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	21.00	0.00
tblVehicleTrips	PR_TP	27.00	0.00
tblVehicleTrips	PR_TP	28.00	0.00
tblVehicleTrips	PR_TP	14.00	0.00
tblVehicleTrips	PR_TP	52.00	0.00
tblVehicleTrips	PR_TP	37.00	0.00
tblVehicleTrips	PR_TP	58.00	0.00
tblVehicleTrips	PR_TP	38.00	0.00
tblVehicleTrips	PR_TP	54.00	0.00
tblVehicleTrips	ST_TR	23.72	0.00
tblVehicleTrips	ST_TR	86.32	0.00
tblVehicleTrips	ST_TR	6.21	0.00
tblVehicleTrips	ST_TR	168.56	0.00
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	158.37	0.00
tblVehicleTrips	ST_TR	8.19	0.00

tblVehicleTrips	ST_TR	94.36	0.00
tblVehicleTrips	ST_TR	49.97	0.00
tblVehicleTrips	SU_TR	11.88	0.00
tblVehicleTrips	SU_TR	31.90	0.00
tblVehicleTrips	SU_TR	5.83	0.00
tblVehicleTrips	SU_TR	168.56	0.00
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	131.84	0.00
tblVehicleTrips	SU_TR	5.95	0.00
tblVehicleTrips	SU_TR	72.16	0.00
tblVehicleTrips	SU_TR	25.24	0.00
tblVehicleTrips	WD_TR	23.72	0.00
tblVehicleTrips	WD_TR	148.15	0.00
tblVehicleTrips	WD_TR	74.06	0.00
tblVehicleTrips	WD_TR	168.56	0.00
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	127.15	0.00
tblVehicleTrips	WD_TR	8.17	0.00
tblVehicleTrips	WD_TR	89.95	0.00
tblVehicleTrips	WD_TR	42.70	0.00
tblWater	IndoorWaterUseRate	338,691.99	0.00
tblWater	IndoorWaterUseRate	237,737.51	0.00
tblWater	IndoorWaterUseRate	428,466.78	0.00
tblWater	IndoorWaterUseRate	239,074.00	0.00
tblWater	IndoorWaterUseRate	2,247,439.47	0.00
tblWater	IndoorWaterUseRate	1,769,601.54	0.00
tblWater	IndoorWaterUseRate	3,424,513.95	0.00

tblWater	IndoorWaterUseRate	4,006,645.00	0.00
tblWater	IndoorWaterUseRate	3,777,698.60	0.00
tblWater	OutdoorWaterUseRate	207,585.41	0.00
tblWater	OutdoorWaterUseRate	145,710.09	0.00
tblWater	OutdoorWaterUseRate	1,101,771.72	0.00
tblWater	OutdoorWaterUseRate	146,529.23	0.00
tblWater	OutdoorWaterUseRate	1,377,462.90	0.00
tblWater	OutdoorWaterUseRate	112,953.29	0.00
tblWater	OutdoorWaterUseRate	380,501.55	0.00
tblWater	OutdoorWaterUseRate	255,743.30	0.00
tblWater	OutdoorWaterUseRate	2,315,363.66	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	8.8590	149.1104	54.1525	0.2621	19.9200	3.4715	23.3914	7.9365	3.1980	11.1344	0.0000	26,875.7674	26,875.7674	4.6571	0.0000	26,992.1957
Maximum	**8.8590**	**149.1104**	**54.1525**	**0.2621**	**19.9200**	**3.4715**	**23.3914**	**7.9365**	**3.1980**	**11.1344**	**0.0000**	**26,875.7674**	**26,875.7674**	**4.6571**	**0.0000**	**26,992.1957**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	8.8590	149.1104	54.1525	0.2621	9.4211	3.4715	12.8925	3.5472	3.1980	6.7452	0.0000	26,875.7674	26,875.7674	4.6571	0.0000	26,992.1957
Maximum	**8.8590**	**149.1104**	**54.1525**	**0.2621**	**9.4211**	**3.4715**	**12.8925**	**3.5472**	**3.1980**	**6.7452**	**0.0000**	**26,875.7674**	**26,875.7674**	**4.6571**	**0.0000**	**26,992.1957**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**52.71**	**0.00**	**44.88**	**55.31**	**0.00**	**39.42**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**5.3160**	**1.4900e-003**	**0.1621**	**1.0000e-005**	**0.0000**	**5.8000e-004**	**5.8000e-004**	**0.0000**	**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**	**0.0000**	**0.3691**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**5.3160**	**1.4900e-003**	**0.1621**	**1.0000e-005**	**0.0000**	**5.8000e-004**	**5.8000e-004**	**0.0000**	**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**	**0.0000**	**0.3691**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Import Activities	Site Preparation	1/1/2020	6/24/2020	5	126	
2	Grading	Grading	1/1/2020	6/24/2020	5	126	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 441

Acres of Paving: 17.56

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Import Activities	Off-Highway Trucks	1	8.00	402	0.38
Import Activities	Other Construction Equipment	1	8.00	172	0.42
Import Activities	Rubber Tired Dozers	1	8.00	247	0.40
Import Activities	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Excavators	0	8.00	158	0.38
Grading	Graders	0	8.00	187	0.41
Grading	Off-Highway Trucks	1	8.00	402	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	3	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Import Activities	4	10.00	0.00	58,668.00	14.70	6.90	6.00	LD_Mix	HDT_Mix	HHDT
Grading	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Import Activities - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.4775	0.0000	7.4775	3.4845	0.0000	3.4845			0.0000			0.0000
Off-Road	2.4461	24.9992	14.3435	0.0310		1.1949	1.1949		1.0993	1.0993		3,005.5371	3,005.5371	0.9721		3,029.8384
Total	**2.4461**	**24.9992**	**14.3435**	**0.0310**	**7.4775**	**1.1949**	**8.6724**	**3.4845**	**1.0993**	**4.5839**		**3,005.5371**	**3,005.5371**	**0.9721**		**3,029.8384**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.5660	71.1194	8.4572	0.1613	2.4515	0.1145	2.5660	0.6728	0.1095	0.7823		17,103.3011	17,103.3011	1.5727		17,142.6173
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0546	0.0350	0.4497	1.1400e-003	0.1118	7.3000e-004	0.1125	0.0296	6.7000e-004	0.0303		113.0084	113.0084	3.4500e-003		113.0947
Total	**1.6206**	**71.1544**	**8.9069**	**0.1624**	**2.5633**	**0.1152**	**2.6785**	**0.7024**	**0.1102**	**0.8126**		**17,216.3095**	**17,216.3095**	**1.5761**		**17,255.7119**

3.2 Import Activities - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9162	0.0000	2.9162	1.3590	0.0000	1.3590			0.0000			0.0000
Off-Road	2.4461	24.9992	14.3435	0.0310		1.1949	1.1949		1.0993	1.0993	0.0000	3,005.5371	3,005.5371	0.9721		3,029.8384
Total	**2.4461**	**24.9992**	**14.3435**	**0.0310**	**2.9162**	**1.1949**	**4.1111**	**1.3590**	**1.0993**	**2.4583**	**0.0000**	**3,005.5371**	**3,005.5371**	**0.9721**		**3,029.8384**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.5660	71.1194	8.4572	0.1613	2.4515	0.1145	2.5660	0.6728	0.1095	0.7823		17,103.3011	17,103.3011	1.5727		17,142.6173
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0546	0.0350	0.4497	1.1400e-003	0.1118	7.3000e-004	0.1125	0.0296	6.7000e-004	0.0303		113.0084	113.0084	3.4500e-003		113.0947
Total	**1.6206**	**71.1544**	**8.9069**	**0.1624**	**2.5633**	**0.1152**	**2.6785**	**0.7024**	**0.1102**	**0.8126**		**17,216.3095**	**17,216.3095**	**1.5761**		**17,255.7119**

3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.7338	0.0000	9.7338	3.7110	0.0000	3.7110			0.0000			0.0000
Off-Road	4.7213	52.9112	30.3175	0.0672		2.1604	2.1604		1.9876	1.9876		6,507.0099	6,507.0099	2.1045		6,559.6223
Total	**4.7213**	**52.9112**	**30.3175**	**0.0672**	**9.7338**	**2.1604**	**11.8943**	**3.7110**	**1.9876**	**5.6986**		**6,507.0099**	**6,507.0099**	**2.1045**		**6,559.6223**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0710	0.0455	0.5846	1.4800e-003	0.1453	9.5000e-004	0.1463	0.0385	8.8000e-004	0.0394		146.9109	146.9109	4.4800e-003		147.0231
Total	**0.0710**	**0.0455**	**0.5846**	**1.4800e-003**	**0.1453**	**9.5000e-004**	**0.1463**	**0.0385**	**8.8000e-004**	**0.0394**		**146.9109**	**146.9109**	**4.4800e-003**		**147.0231**

3.3 Grading - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7962	0.0000	3.7962	1.4473	0.0000	1.4473			0.0000			0.0000
Off-Road	4.7213	52.9112	30.3175	0.0672		2.1604	2.1604		1.9876	1.9876	0.0000	6,507.0099	6,507.0099	2.1045		6,559.6223
Total	**4.7213**	**52.9112**	**30.3175**	**0.0672**	**3.7962**	**2.1604**	**5.9566**	**1.4473**	**1.9876**	**3.4349**	**0.0000**	**6,507.0099**	**6,507.0099**	**2.1045**		**6,559.6223**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0710	0.0455	0.5846	1.4800e-003	0.1453	9.5000e-004	0.1463	0.0385	8.8000e-004	0.0394		146.9109	146.9109	4.4800e-003		147.0231
Total	**0.0710**	**0.0455**	**0.5846**	**1.4800e-003**	**0.1453**	**9.5000e-004**	**0.1463**	**0.0385**	**8.8000e-004**	**0.0394**		**146.9109**	**146.9109**	**4.4800e-003**		**147.0231**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	0.00	0.00	0.00		
Bank (with Drive-Through)	0.00	0.00	0.00		
Day-Care Center	0.00	0.00	0.00		
Gasoline/Service Station	0.00	0.00	0.00		
Health Club	0.00	0.00	0.00		
High Turnover (Sit Down Restaurant)	0.00	0.00	0.00		
Hotel	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Quality Restaurant	0.00	0.00	0.00		
Regional Shopping Center	0.00	0.00	0.00		
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Bank (with Drive-Through)	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Day-Care Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Gasoline/Service Station	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Health Club	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
High Turnover (Sit Down	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Hotel	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Quality Restaurant	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
User Defined Recreational	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Bank (with Drive-Through)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Day-Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Gasoline/Service Station	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Health Club	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
High Turnover (Sit Down Restaurant)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Hotel	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Other Asphalt Surfaces	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Parking Lot	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Quality Restaurant	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Regional Shopping Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
User Defined Recreational	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Bedford Marketplace (Dirt Import Process - Unmitigated) - San Bernardino-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Unmitigated	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.6235					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.6773					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0151	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Total	**5.3159**	**1.4900e-003**	**0.1621**	**1.0000e-005**		**5.8000e-004**	**5.8000e-004**		**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**		**0.3691**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.6235					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.6773					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0151	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Total	**5.3159**	**1.4900e-003**	**0.1621**	**1.0000e-005**		**5.8000e-004**	**5.8000e-004**		**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**		**0.3691**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Bedford Marketplace (Dirt Import Process - Unmitigated)

San Bernardino-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Bank (with Drive-Through)	6.00	1000sqft	0.14	6,000.00	0
Day-Care Center	9.99	1000sqft	0.23	9,990.00	0
Other Asphalt Surfaces	408.85	1000sqft	9.39	408,852.00	0
Parking Lot	890.00	Space	8.17	356,000.00	0
Health Club	38.00	1000sqft	0.87	38,000.00	0
High Turnover (Sit Down Restaurant)	5.83	1000sqft	0.13	5,826.00	0
Hotel	135.00	Room	0.57	88,730.00	0
Quality Restaurant	13.20	1000sqft	0.30	13,200.00	0
User Defined Recreational	2.20	User Defined Unit	0.05	2,200.00	0
Automobile Care Center	3.60	1000sqft	0.08	3,600.00	0
Gasoline/Service Station	18.00	Pump	0.09	4,000.00	0
Regional Shopping Center	51.00	1000sqft	1.17	51,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Net Land Area per the Site Plan is +/-21.2 acres.

Construction Phase - The Dirt Import Process anticipated to 126 days.

Off-road Equipment - Hours are based on an 8-hour workday.

Off-road Equipment - Equipment adjusted per information provided by the Project Applicant.

Off-road Equipment - Equipment adjusted per information provided by the Project Applicant.

Trips and VMT - Hauling trips based on the amount of import and the 15 cubic yard hauling capacity.

Grading - For purposes of analysis, total acres graded per day is based on the equipment specific grading rates (CalEEMod Appendix A) and the equipment list.

Architectural Coating -

Vehicle Trips - Construction Run Only.

Energy Use - Construction Run Only.

Water And Wastewater - Construction Run Only.

Solid Waste - Construction Run Only.

Construction Off-road Equipment Mitigation - Rule 403

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	35.00	126.00
tblConstructionPhase	NumDays	10.00	126.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	3.03	0.00
tblEnergyUse	LightingElect	2.93	0.00

tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	6.62	0.00
tblEnergyUse	LightingElect	5.44	0.00
tblEnergyUse	LightingElect	0.35	0.00
tblEnergyUse	LightingElect	6.62	0.00
tblEnergyUse	LightingElect	5.61	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	1.49	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	28.48	0.00
tblEnergyUse	NT24E	6.23	0.00
tblEnergyUse	NT24E	28.48	0.00
tblEnergyUse	NT24E	2.44	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	1.79	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	195.77	0.00
tblEnergyUse	NT24NG	4.86	0.00
tblEnergyUse	NT24NG	195.77	0.00
tblEnergyUse	NT24NG	0.30	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	2.78	0.00

tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	12.38	0.00
tblEnergyUse	T24E	6.47	0.00
tblEnergyUse	T24E	12.38	0.00
tblEnergyUse	T24E	4.58	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	6.97	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	77.67	0.00
tblEnergyUse	T24NG	55.15	0.00
tblEnergyUse	T24NG	77.67	0.00
tblEnergyUse	T24NG	1.92	0.00
tblGrading	AcresOfGrading	378.00	441.00
tblGrading	AcresOfGrading	0.00	126.00
tblGrading	MaterialExported	0.00	440,000.00
tblLandUse	LandUseSquareFeet	408,850.00	408,852.00
tblLandUse	LandUseSquareFeet	5,830.00	5,826.00
tblLandUse	LandUseSquareFeet	196,020.00	88,730.00
tblLandUse	LandUseSquareFeet	0.00	2,200.00
tblLandUse	LandUseSquareFeet	2,541.15	4,000.00
tblLandUse	LotAcreage	8.01	8.17
tblLandUse	LotAcreage	4.50	0.57
tblLandUse	LotAcreage	0.00	0.05
tblLandUse	LotAcreage	0.06	0.09

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblSolidWaste	SolidWasteGenerationRate	13.75	0.00
tblSolidWaste	SolidWasteGenerationRate	5.60	0.00
tblSolidWaste	SolidWasteGenerationRate	12.99	0.00
tblSolidWaste	SolidWasteGenerationRate	9.70	0.00
tblSolidWaste	SolidWasteGenerationRate	216.60	0.00
tblSolidWaste	SolidWasteGenerationRate	69.38	0.00
tblSolidWaste	SolidWasteGenerationRate	73.91	0.00
tblSolidWaste	SolidWasteGenerationRate	12.04	0.00
tblSolidWaste	SolidWasteGenerationRate	53.55	0.00
tblTripsAndVMT	HaulingTripLength	20.00	6.00
tblTripsAndVMT	HaulingTripNumber	55,000.00	58,668.00
tblVehicleEF	HHD	1.24	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	3.46	7.82
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.92	2.4420e-003
tblVehicleEF	HHD	6,983.95	1,459.93
tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.07	7.65

tblVehicleEF	HHD	2.87	3.24
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004
tblVehicleEF	HHD	0.89	0.60
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	2.4200e-004	6.3700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004
tblVehicleEF	HHD	1.02	0.68
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4200e-004	6.3700e-004

tblVehicleEF	HHD	0.07	1.0000e-006
tblVehicleEF	HHD	1.17	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	2.52	7.65
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.80	2.2950e-003
tblVehicleEF	HHD	7,395.94	1,453.32
tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.97	7.40
tblVehicleEF	HHD	2.70	3.05
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	1.8400e-004	9.0000e-006
tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.84	0.62
tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.09	0.09

tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.7000e-005	0.00
tblVehicleEF	HHD	1.8400e-004	9.0000e-006
tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.97	0.71
tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	1.34	0.03
tblVehicleEF	HHD	0.04	3.7740e-003
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	4.76	7.98
tblVehicleEF	HHD	0.58	0.36
tblVehicleEF	HHD	1.89	2.4140e-003
tblVehicleEF	HHD	6,415.00	1,454.79
tblVehicleEF	HHD	1,493.95	1,371.01
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	26.84	7.90
tblVehicleEF	HHD	2.83	3.15
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05

tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.8160e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004
tblVehicleEF	HHD	0.96	0.56
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.08
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.06	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004
tblVehicleEF	HHD	1.10	0.64
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.09
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.07	1.0000e-006
tblVehicleEF	LDA	4.6640e-003	2.7950e-003
tblVehicleEF	LDA	6.4640e-003	0.06
tblVehicleEF	LDA	0.62	0.70
tblVehicleEF	LDA	1.32	2.22

tblVehicleEF	LDA	261.85	269.33
tblVehicleEF	LDA	59.28	55.48
tblVehicleEF	LDA	0.06	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.6230e-003	2.6640e-003
tblVehicleEF	LDA	6.1500e-004	5.4900e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.10	0.27
tblVehicleEF	LDA	5.3170e-003	3.2030e-003
tblVehicleEF	LDA	5.3900e-003	0.05
tblVehicleEF	LDA	0.76	0.86
tblVehicleEF	LDA	1.10	1.85
tblVehicleEF	LDA	286.52	294.16
tblVehicleEF	LDA	59.28	54.75

tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.07	0.21
tblVehicleEF	LDA	2.8710e-003	2.9100e-003
tblVehicleEF	LDA	6.1100e-004	5.4200e-004
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.08	0.23
tblVehicleEF	LDA	4.5320e-003	2.7260e-003
tblVehicleEF	LDA	6.4200e-003	0.06
tblVehicleEF	LDA	0.58	0.67
tblVehicleEF	LDA	1.30	2.19
tblVehicleEF	LDA	256.02	263.51
tblVehicleEF	LDA	59.28	55.41
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003

tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.25
tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.5640e-003	2.6070e-003
tblVehicleEF	LDA	6.1500e-004	5.4800e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.25
tblVehicleEF	LDA	0.09	0.27
tblVehicleEF	LDT1	0.02	8.1890e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.71	1.63
tblVehicleEF	LDT1	4.02	2.54
tblVehicleEF	LDT1	323.73	319.09
tblVehicleEF	LDT1	72.77	67.44
tblVehicleEF	LDT1	0.18	0.15
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003

tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.29	0.48
tblVehicleEF	LDT1	3.2600e-003	3.1580e-003
tblVehicleEF	LDT1	7.9900e-004	6.6700e-004
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.06	0.05
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT1	0.02	9.2860e-003
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	2.05	1.97
tblVehicleEF	LDT1	3.30	2.10
tblVehicleEF	LDT1	352.65	345.09
tblVehicleEF	LDT1	72.77	66.47
tblVehicleEF	LDT1	0.16	0.13
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.40	0.44

tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.24	0.41
tblVehicleEF	LDT1	3.5540e-003	3.4150e-003
tblVehicleEF	LDT1	7.8600e-004	6.5800e-004
tblVehicleEF	LDT1	0.40	0.44
tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.06	0.06
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.26	0.44
tblVehicleEF	LDT1	0.01	7.9980e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.62	1.55
tblVehicleEF	LDT1	3.95	2.49
tblVehicleEF	LDT1	316.91	312.93
tblVehicleEF	LDT1	72.77	67.36
tblVehicleEF	LDT1	0.17	0.14
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13

tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.28	0.48
tblVehicleEF	LDT1	3.1900e-003	3.0970e-003
tblVehicleEF	LDT1	7.9800e-004	6.6700e-004
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13
tblVehicleEF	LDT1	0.05	0.05
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT2	6.9330e-003	4.8260e-003
tblVehicleEF	LDT2	9.2890e-003	0.08
tblVehicleEF	LDT2	0.85	1.06
tblVehicleEF	LDT2	1.85	2.89
tblVehicleEF	LDT2	363.70	344.02
tblVehicleEF	LDT2	81.97	72.94
tblVehicleEF	LDT2	0.10	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50

tblVehicleEF	LDT2	0.13	0.38
tblVehicleEF	LDT2	3.6440e-003	3.4040e-003
tblVehicleEF	LDT2	8.5100e-004	7.2200e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.14	0.42
tblVehicleEF	LDT2	7.8730e-003	5.5090e-003
tblVehicleEF	LDT2	7.7350e-003	0.07
tblVehicleEF	LDT2	1.04	1.30
tblVehicleEF	LDT2	1.53	2.39
tblVehicleEF	LDT2	397.09	369.57
tblVehicleEF	LDT2	81.97	71.94
tblVehicleEF	LDT2	0.09	0.09
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	3.9810e-003	3.6570e-003

tblVehicleEF	LDT2	8.4600e-004	7.1200e-004
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.11	0.35
tblVehicleEF	LDT2	6.7430e-003	4.7100e-003
tblVehicleEF	LDT2	9.2200e-003	0.08
tblVehicleEF	LDT2	0.81	1.01
tblVehicleEF	LDT2	1.82	2.84
tblVehicleEF	LDT2	355.82	337.97
tblVehicleEF	LDT2	81.97	72.85
tblVehicleEF	LDT2	0.09	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.58
tblVehicleEF	LDT2	0.12	0.38
tblVehicleEF	LDT2	3.5650e-003	3.3440e-003
tblVehicleEF	LDT2	8.5100e-004	7.2100e-004
tblVehicleEF	LDT2	0.07	0.11

tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.08	0.58
tblVehicleEF	LDT2	0.14	0.41
tblVehicleEF	LHD1	5.4860e-003	4.9840e-003
tblVehicleEF	LHD1	0.01	7.1410e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.77	1.07
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.99
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.26	1.69
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.02

tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.29	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6200e-004	1.0900e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD1	5.4860e-003	5.0000e-003
tblVehicleEF	LHD1	0.01	7.3180e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.18	0.99
tblVehicleEF	LHD1	2.58	1.00
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.98
tblVehicleEF	LHD1	30.92	10.87
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.12	1.58
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003

tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.27	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0370e-003	6.3960e-003
tblVehicleEF	LHD1	3.5800e-004	1.0800e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.30	0.09
tblVehicleEF	LHD1	5.4860e-003	4.9870e-003
tblVehicleEF	LHD1	0.01	7.1590e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17

tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.72	1.05
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.96
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.22	1.66
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6100e-004	1.0800e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11

tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD2	3.8190e-003	3.4060e-003
tblVehicleEF	LHD2	5.2410e-003	4.5240e-003
tblVehicleEF	LHD2	9.1660e-003	0.01
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.29	0.64
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.51
tblVehicleEF	LHD2	24.89	7.96
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.69	1.81
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.01	0.02

tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7300e-004	7.9000e-005
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.14	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4160e-003
tblVehicleEF	LHD2	5.3190e-003	4.5750e-003
tblVehicleEF	LHD2	8.7380e-003	9.6870e-003
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.56	0.62
tblVehicleEF	LHD2	1.21	0.60
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.89
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.59	1.70
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01

tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7100e-004	7.8000e-005
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4070e-003
tblVehicleEF	LHD2	5.2490e-003	4.5300e-003
tblVehicleEF	LHD2	9.0820e-003	0.01
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.27	0.63

tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.94
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.67	1.78
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7200e-004	7.9000e-005
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.07	0.08

tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.16	0.25
tblVehicleEF	MCY	21.02	21.16
tblVehicleEF	MCY	9.91	8.77
tblVehicleEF	MCY	167.12	211.16
tblVehicleEF	MCY	46.87	61.87
tblVehicleEF	MCY	1.17	1.17
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84
tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.26	2.26
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.17	1.92
tblVehicleEF	MCY	2.0790e-003	2.0900e-003
tblVehicleEF	MCY	6.9500e-004	6.1200e-004
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84
tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.76	2.76
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.37	2.08

tblVehicleEF	MCY	0.41	0.32
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	21.14	21.29
tblVehicleEF	MCY	9.06	7.97
tblVehicleEF	MCY	167.12	211.14
tblVehicleEF	MCY	46.87	59.68
tblVehicleEF	MCY	0.99	0.99
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.19	2.19
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	1.87	1.64
tblVehicleEF	MCY	2.0790e-003	2.0890e-003
tblVehicleEF	MCY	6.7100e-004	5.9100e-004
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.69	2.68
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.03	1.78
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.15	0.24

tblVehicleEF	MCY	20.06	20.18
tblVehicleEF	MCY	9.53	8.41
tblVehicleEF	MCY	167.12	209.47
tblVehicleEF	MCY	46.87	61.06
tblVehicleEF	MCY	1.13	1.13
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.22	2.22
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.10	1.84
tblVehicleEF	MCY	2.0630e-003	2.0730e-003
tblVehicleEF	MCY	6.8600e-004	6.0400e-004
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.71	2.71
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.28	2.00
tblVehicleEF	MDV	0.01	6.6050e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.55	1.33
tblVehicleEF	MDV	3.59	3.53

tblVehicleEF	MDV	498.66	425.70
tblVehicleEF	MDV	110.76	90.07
tblVehicleEF	MDV	0.20	0.14
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.28	0.50
tblVehicleEF	MDV	5.0000e-003	4.2090e-003
tblVehicleEF	MDV	1.1710e-003	8.9100e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MDV	0.02	7.4780e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.87	1.60
tblVehicleEF	MDV	2.99	2.92
tblVehicleEF	MDV	542.90	452.84
tblVehicleEF	MDV	110.76	88.84

tblVehicleEF	MDV	0.18	0.12
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.24	0.42
tblVehicleEF	MDV	5.4470e-003	4.4780e-003
tblVehicleEF	MDV	1.1600e-003	8.7900e-004
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22
tblVehicleEF	MDV	0.06	0.05
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.26	0.46
tblVehicleEF	MDV	0.01	6.4310e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.47	1.25
tblVehicleEF	MDV	3.53	3.47
tblVehicleEF	MDV	488.33	419.25
tblVehicleEF	MDV	110.76	89.97
tblVehicleEF	MDV	0.19	0.13
tblVehicleEF	MDV	1.8680e-003	1.7260e-003

tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.13	0.61
tblVehicleEF	MDV	0.28	0.49
tblVehicleEF	MDV	4.8960e-003	4.1450e-003
tblVehicleEF	MDV	1.1700e-003	8.9000e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.13	0.61
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.60	0.37
tblVehicleEF	MH	6.96	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.64	4.70
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00

tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.2000e-004	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.44	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.74	0.37
tblVehicleEF	MH	6.31	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.50	4.42
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00

tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.37	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.0900e-004	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.41	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.61	0.37
tblVehicleEF	MH	6.87	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.61	4.62
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00

tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.1900e-004	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.43	0.00
tblVehicleEF	MHD	0.02	3.2250e-003
tblVehicleEF	MHD	4.1450e-003	6.0340e-003
tblVehicleEF	MHD	0.06	8.8310e-003
tblVehicleEF	MHD	0.33	0.34
tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	6.00	1.03
tblVehicleEF	MHD	155.10	71.06
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.43
tblVehicleEF	MHD	0.63	0.61

tblVehicleEF	MHD	1.08	2.22
tblVehicleEF	MHD	4.3700e-004	2.0190e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	4.1800e-004	1.9320e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.11
tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.4910e-003	6.7400e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4400e-004	8.3000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.11
tblVehicleEF	MHD	0.40	0.05
tblVehicleEF	MHD	0.02	3.0610e-003
tblVehicleEF	MHD	4.2290e-003	6.0860e-003
tblVehicleEF	MHD	0.05	8.4200e-003

tblVehicleEF	MHD	0.24	0.28
tblVehicleEF	MHD	0.32	0.56
tblVehicleEF	MHD	5.61	0.96
tblVehicleEF	MHD	164.29	72.29
tblVehicleEF	MHD	1,105.72	1,029.54
tblVehicleEF	MHD	53.92	8.32
tblVehicleEF	MHD	0.65	0.62
tblVehicleEF	MHD	1.01	2.09
tblVehicleEF	MHD	3.6900e-004	1.7050e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	3.5300e-004	1.6310e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.35	0.04
tblVehicleEF	MHD	1.5770e-003	6.8600e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.3800e-004	8.2000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02

tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.38	0.05
tblVehicleEF	MHD	0.02	3.4660e-003
tblVehicleEF	MHD	4.1530e-003	6.0380e-003
tblVehicleEF	MHD	0.06	8.7320e-003
tblVehicleEF	MHD	0.46	0.42
tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	5.90	1.02
tblVehicleEF	MHD	142.41	69.34
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.40
tblVehicleEF	MHD	0.60	0.60
tblVehicleEF	MHD	1.06	2.18
tblVehicleEF	MHD	5.3200e-004	2.4540e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	5.0900e-004	2.3480e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	7.0500e-004	3.2200e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.13

tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.3710e-003	6.5800e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4300e-004	8.3000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	7.0500e-004	3.2200e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.13
tblVehicleEF	MHD	0.39	0.05
tblVehicleEF	OBUS	0.01	9.3650e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.27	0.49
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.67	2.81
tblVehicleEF	OBUS	70.21	68.33
tblVehicleEF	OBUS	1,126.32	1,507.23
tblVehicleEF	OBUS	71.08	22.19
tblVehicleEF	OBUS	0.32	0.39
tblVehicleEF	OBUS	1.10	1.47
tblVehicleEF	OBUS	1.1300e-004	1.5090e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.0800e-004	1.4440e-003
tblVehicleEF	OBUS	5.1650e-003	0.02

tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.41	0.13
tblVehicleEF	OBUS	6.8200e-004	6.5300e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2800e-004	2.2000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	OBUS	0.01	9.3930e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.26	0.47
tblVehicleEF	OBUS	0.75	1.22
tblVehicleEF	OBUS	6.11	2.57
tblVehicleEF	OBUS	73.34	68.71
tblVehicleEF	OBUS	1,126.32	1,507.28
tblVehicleEF	OBUS	71.08	21.80

tblVehicleEF	OBUS	0.33	0.39
tblVehicleEF	OBUS	1.02	1.35
tblVehicleEF	OBUS	9.5000e-005	1.2750e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	9.1000e-005	1.2200e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.05	0.09
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.39	0.13
tblVehicleEF	OBUS	7.1200e-004	6.5600e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.1800e-004	2.1600e-004
tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.07	0.11
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.42	0.14
tblVehicleEF	OBUS	0.01	9.3640e-003
tblVehicleEF	OBUS	0.01	0.01

tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.28	0.51
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.62	2.79
tblVehicleEF	OBUS	65.88	67.80
tblVehicleEF	OBUS	1,126.32	1,507.24
tblVehicleEF	OBUS	71.08	22.15
tblVehicleEF	OBUS	0.31	0.39
tblVehicleEF	OBUS	1.08	1.44
tblVehicleEF	OBUS	1.3700e-004	1.8320e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.3100e-004	1.7520e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.41	0.13
tblVehicleEF	OBUS	6.4100e-004	6.4800e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2700e-004	2.1900e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03

tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3980e-003
tblVehicleEF	SBUS	0.07	3.9120e-003
tblVehicleEF	SBUS	5.64	1.82
tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.49	0.54
tblVehicleEF	SBUS	1,270.71	336.96
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.11
tblVehicleEF	SBUS	12.46	3.45
tblVehicleEF	SBUS	5.17	5.36
tblVehicleEF	SBUS	0.01	4.4720e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	4.2790e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004
tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.68	0.19

tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.28	0.02
tblVehicleEF	SBUS	0.01	3.2020e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004
tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.31	0.02
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.4900e-003
tblVehicleEF	SBUS	0.06	3.2450e-003
tblVehicleEF	SBUS	5.48	1.78
tblVehicleEF	SBUS	0.72	0.64
tblVehicleEF	SBUS	3.76	0.38
tblVehicleEF	SBUS	1,335.64	345.46
tblVehicleEF	SBUS	1,144.20	1,143.58
tblVehicleEF	SBUS	36.06	2.85
tblVehicleEF	SBUS	12.86	3.52
tblVehicleEF	SBUS	4.84	5.03
tblVehicleEF	SBUS	0.01	3.7780e-003
tblVehicleEF	SBUS	0.01	0.01

tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	3.6140e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003
tblVehicleEF	SBUS	0.67	0.19
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.23	0.02
tblVehicleEF	SBUS	0.01	3.2820e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.2700e-004	2.8000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003
tblVehicleEF	SBUS	0.96	0.27
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.25	0.02
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3930e-003
tblVehicleEF	SBUS	0.07	4.0100e-003
tblVehicleEF	SBUS	5.85	1.87

tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.54	0.56
tblVehicleEF	SBUS	1,181.05	325.23
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.14
tblVehicleEF	SBUS	11.91	3.35
tblVehicleEF	SBUS	5.09	5.28
tblVehicleEF	SBUS	0.02	5.4310e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.02	5.1960e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003
tblVehicleEF	SBUS	0.68	0.19
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.29	0.02
tblVehicleEF	SBUS	0.01	3.0910e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003

tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.32	0.03
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.79	32.64
tblVehicleEF	UBUS	14.93	1.46
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.41
tblVehicleEF	UBUS	6.43	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004
tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.19	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003

tblVehicleEF	UBUS	1.6230e-003	1.7200e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004
tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.30	0.08
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.08	0.02
tblVehicleEF	UBUS	9.90	32.64
tblVehicleEF	UBUS	12.23	1.20
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	16.98
tblVehicleEF	UBUS	5.98	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	0.02	3.2040e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	0.67	0.06
tblVehicleEF	UBUS	0.02	0.05

tblVehicleEF	UBUS	1.06	0.06
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.5760e-003	1.6800e-004
tblVehicleEF	UBUS	0.02	3.2040e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	2.69	4.28
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.16	0.07
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.80	32.64
tblVehicleEF	UBUS	14.43	1.42
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.36
tblVehicleEF	UBUS	6.31	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004

tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.17	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.6140e-003	1.7200e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004
tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.28	0.08
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TTP	48.00	0.00
tblVehicleTrips	CC_TTP	74.40	0.00
tblVehicleTrips	CC_TTP	82.30	0.00
tblVehicleTrips	CC_TTP	79.00	0.00

tblVehicleTrips	CC_TTP	64.10	0.00
tblVehicleTrips	CC_TTP	72.50	0.00
tblVehicleTrips	CC_TTP	61.60	0.00
tblVehicleTrips	CC_TTP	69.00	0.00
tblVehicleTrips	CC_TTP	64.70	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	5.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CW_TL	16.60	0.00

tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TTP	33.00	0.00
tblVehicleTrips	CW_TTP	6.60	0.00
tblVehicleTrips	CW_TTP	12.70	0.00
tblVehicleTrips	CW_TTP	2.00	0.00
tblVehicleTrips	CW_TTP	16.90	0.00
tblVehicleTrips	CW_TTP	8.50	0.00
tblVehicleTrips	CW_TTP	19.40	0.00
tblVehicleTrips	CW_TTP	12.00	0.00
tblVehicleTrips	CW_TTP	16.30	0.00
tblVehicleTrips	DV_TP	51.00	0.00
tblVehicleTrips	DV_TP	26.00	0.00
tblVehicleTrips	DV_TP	58.00	0.00
tblVehicleTrips	DV_TP	27.00	0.00
tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	DV_TP	20.00	0.00
tblVehicleTrips	DV_TP	38.00	0.00

tblVehicleTrips	DV_TP	18.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	PB_TP	28.00	0.00
tblVehicleTrips	PB_TP	47.00	0.00
tblVehicleTrips	PB_TP	14.00	0.00
tblVehicleTrips	PB_TP	59.00	0.00
tblVehicleTrips	PB_TP	9.00	0.00
tblVehicleTrips	PB_TP	43.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	44.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	21.00	0.00
tblVehicleTrips	PR_TP	27.00	0.00
tblVehicleTrips	PR_TP	28.00	0.00
tblVehicleTrips	PR_TP	14.00	0.00
tblVehicleTrips	PR_TP	52.00	0.00
tblVehicleTrips	PR_TP	37.00	0.00
tblVehicleTrips	PR_TP	58.00	0.00
tblVehicleTrips	PR_TP	38.00	0.00
tblVehicleTrips	PR_TP	54.00	0.00
tblVehicleTrips	ST_TR	23.72	0.00
tblVehicleTrips	ST_TR	86.32	0.00
tblVehicleTrips	ST_TR	6.21	0.00
tblVehicleTrips	ST_TR	168.56	0.00
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	158.37	0.00
tblVehicleTrips	ST_TR	8.19	0.00

tblVehicleTrips	ST_TR	94.36	0.00
tblVehicleTrips	ST_TR	49.97	0.00
tblVehicleTrips	SU_TR	11.88	0.00
tblVehicleTrips	SU_TR	31.90	0.00
tblVehicleTrips	SU_TR	5.83	0.00
tblVehicleTrips	SU_TR	168.56	0.00
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	131.84	0.00
tblVehicleTrips	SU_TR	5.95	0.00
tblVehicleTrips	SU_TR	72.16	0.00
tblVehicleTrips	SU_TR	25.24	0.00
tblVehicleTrips	WD_TR	23.72	0.00
tblVehicleTrips	WD_TR	148.15	0.00
tblVehicleTrips	WD_TR	74.06	0.00
tblVehicleTrips	WD_TR	168.56	0.00
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	127.15	0.00
tblVehicleTrips	WD_TR	8.17	0.00
tblVehicleTrips	WD_TR	89.95	0.00
tblVehicleTrips	WD_TR	42.70	0.00
tblWater	IndoorWaterUseRate	338,691.99	0.00
tblWater	IndoorWaterUseRate	237,737.51	0.00
tblWater	IndoorWaterUseRate	428,466.78	0.00
tblWater	IndoorWaterUseRate	239,074.00	0.00
tblWater	IndoorWaterUseRate	2,247,439.47	0.00
tblWater	IndoorWaterUseRate	1,769,601.54	0.00
tblWater	IndoorWaterUseRate	3,424,513.95	0.00

tblWater	IndoorWaterUseRate	4,006,645.00	0.00
tblWater	IndoorWaterUseRate	3,777,698.60	0.00
tblWater	OutdoorWaterUseRate	207,585.41	0.00
tblWater	OutdoorWaterUseRate	145,710.09	0.00
tblWater	OutdoorWaterUseRate	1,101,771.72	0.00
tblWater	OutdoorWaterUseRate	146,529.23	0.00
tblWater	OutdoorWaterUseRate	1,377,462.90	0.00
tblWater	OutdoorWaterUseRate	112,953.29	0.00
tblWater	OutdoorWaterUseRate	380,501.55	0.00
tblWater	OutdoorWaterUseRate	255,743.30	0.00
tblWater	OutdoorWaterUseRate	2,315,363.66	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	8.9906	147.7032	56.4531	0.2523	19.9200	3.4761	23.3961	7.9365	3.2024	11.1389	0.0000	25,838.0420	25,838.0420	4.8346	0.0000	25,958.9080
Maximum	**8.9906**	**147.7032**	**56.4531**	**0.2523**	**19.9200**	**3.4761**	**23.3961**	**7.9365**	**3.2024**	**11.1389**	**0.0000**	**25,838.0420**	**25,838.0420**	**4.8346**	**0.0000**	**25,958.9080**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	8.9906	147.7032	56.4531	0.2523	9.4211	3.4761	12.8972	3.5472	3.2024	6.7496	0.0000	25,838.0420	25,838.0420	4.8346	0.0000	25,958.9080
Maximum	**8.9906**	**147.7032**	**56.4531**	**0.2523**	**9.4211**	**3.4761**	**12.8972**	**3.5472**	**3.2024**	**6.7496**	**0.0000**	**25,838.0420**	**25,838.0420**	**4.8346**	**0.0000**	**25,958.9080**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**52.71**	**0.00**	**44.87**	**55.31**	**0.00**	**39.41**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**5.3160**	**1.4900e-003**	**0.1621**	**1.0000e-005**	**0.0000**	**5.8000e-004**	**5.8000e-004**	**0.0000**	**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**	**0.0000**	**0.3691**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**5.3160**	**1.4900e-003**	**0.1621**	**1.0000e-005**	**0.0000**	**5.8000e-004**	**5.8000e-004**	**0.0000**	**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**	**0.0000**	**0.3691**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Import Activities	Site Preparation	1/1/2020	6/24/2020	5	126	
2	Grading	Grading	1/1/2020	6/24/2020	5	126	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 441

Acres of Paving: 17.56

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Import Activities	Off-Highway Trucks	1	8.00	402	0.38
Import Activities	Other Construction Equipment	1	8.00	172	0.42
Import Activities	Rubber Tired Dozers	1	8.00	247	0.40
Import Activities	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Excavators	0	8.00	158	0.38
Grading	Graders	0	8.00	187	0.41
Grading	Off-Highway Trucks	1	8.00	402	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	3	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Import Activities	4	10.00	0.00	58,668.00	14.70	6.90	6.00	LD_Mix	HDT_Mix	HHDT
Grading	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Import Activities - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.4775	0.0000	7.4775	3.4845	0.0000	3.4845			0.0000			0.0000
Off-Road	2.4461	24.9992	14.3435	0.0310		1.1949	1.1949		1.0993	1.0993		3,005.5371	3,005.5371	0.9721		3,029.8384
Total	**2.4461**	**24.9992**	**14.3435**	**0.0310**	**7.4775**	**1.1949**	**8.6724**	**3.4845**	**1.0993**	**4.5839**		**3,005.5371**	**3,005.5371**	**0.9721**		**3,029.8384**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.6976	69.7079	10.9420	0.1518	2.4515	0.1191	2.5706	0.6728	0.1140	0.7867		16,092.3326	16,092.3326	1.7511		16,136.1108
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0546	0.0369	0.3696	1.0200e-003	0.1118	7.3000e-004	0.1125	0.0296	6.7000e-004	0.0303		101.3750	101.3750	3.0300e-003		101.4506
Total	**1.7522**	**69.7448**	**11.3116**	**0.1528**	**2.5633**	**0.1198**	**2.6832**	**0.7024**	**0.1146**	**0.8170**		**16,193.7076**	**16,193.7076**	**1.7542**		**16,237.5615**

3.2 Import Activities - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9162	0.0000	2.9162	1.3590	0.0000	1.3590			0.0000			0.0000
Off-Road	2.4461	24.9992	14.3435	0.0310		1.1949	1.1949		1.0993	1.0993	0.0000	3,005.5371	3,005.5371	0.9721		3,029.8384
Total	**2.4461**	**24.9992**	**14.3435**	**0.0310**	**2.9162**	**1.1949**	**4.1111**	**1.3590**	**1.0993**	**2.4583**	**0.0000**	**3,005.5371**	**3,005.5371**	**0.9721**		**3,029.8384**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.6976	69.7079	10.9420	0.1518	2.4515	0.1191	2.5706	0.6728	0.1140	0.7867		16,092.3326	16,092.3326	1.7511		16,136.1108
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0546	0.0369	0.3696	1.0200e-003	0.1118	7.3000e-004	0.1125	0.0296	6.7000e-004	0.0303		101.3750	101.3750	3.0300e-003		101.4506
Total	**1.7522**	**69.7448**	**11.3116**	**0.1528**	**2.5633**	**0.1198**	**2.6832**	**0.7024**	**0.1146**	**0.8170**		**16,193.7076**	**16,193.7076**	**1.7542**		**16,237.5615**

3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.7338	0.0000	9.7338	3.7110	0.0000	3.7110			0.0000			0.0000
Off-Road	4.7213	52.9112	30.3175	0.0672		2.1604	2.1604		1.9876	1.9876		6,507.0099	6,507.0099	2.1045		6,559.6223
Total	**4.7213**	**52.9112**	**30.3175**	**0.0672**	**9.7338**	**2.1604**	**11.8943**	**3.7110**	**1.9876**	**5.6986**		**6,507.0099**	**6,507.0099**	**2.1045**		**6,559.6223**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0710	0.0479	0.4805	1.3200e-003	0.1453	9.5000e-004	0.1463	0.0385	8.8000e-004	0.0394		131.7875	131.7875	3.9300e-003		131.8858
Total	**0.0710**	**0.0479**	**0.4805**	**1.3200e-003**	**0.1453**	**9.5000e-004**	**0.1463**	**0.0385**	**8.8000e-004**	**0.0394**		**131.7875**	**131.7875**	**3.9300e-003**		**131.8858**

3.3 Grading - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7962	0.0000	3.7962	1.4473	0.0000	1.4473			0.0000			0.0000
Off-Road	4.7213	52.9112	30.3175	0.0672		2.1604	2.1604		1.9876	1.9876	0.0000	6,507.0099	6,507.0099	2.1045		6,559.6223
Total	**4.7213**	**52.9112**	**30.3175**	**0.0672**	**3.7962**	**2.1604**	**5.9566**	**1.4473**	**1.9876**	**3.4349**	**0.0000**	**6,507.0099**	**6,507.0099**	**2.1045**		**6,559.6223**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0710	0.0479	0.4805	1.3200e-003	0.1453	9.5000e-004	0.1463	0.0385	8.8000e-004	0.0394		131.7875	131.7875	3.9300e-003		131.8858
Total	**0.0710**	**0.0479**	**0.4805**	**1.3200e-003**	**0.1453**	**9.5000e-004**	**0.1463**	**0.0385**	**8.8000e-004**	**0.0394**		**131.7875**	**131.7875**	**3.9300e-003**		**131.8858**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	0.00	0.00	0.00		
Bank (with Drive-Through)	0.00	0.00	0.00		
Day-Care Center	0.00	0.00	0.00		
Gasoline/Service Station	0.00	0.00	0.00		
Health Club	0.00	0.00	0.00		
High Turnover (Sit Down Restaurant)	0.00	0.00	0.00		
Hotel	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Quality Restaurant	0.00	0.00	0.00		
Regional Shopping Center	0.00	0.00	0.00		
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Bank (with Drive-Through)	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Day-Care Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Gasoline/Service Station	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Health Club	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
High Turnover (Sit Down	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Hotel	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Quality Restaurant	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
User Defined Recreational	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Bank (with Drive-Through)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Day-Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Gasoline/Service Station	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Health Club	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
High Turnover (Sit Down Restaurant)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Hotel	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Other Asphalt Surfaces	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Parking Lot	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Quality Restaurant	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Regional Shopping Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
User Defined Recreational	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Bedford Marketplace (Dirt Import Process - Unmitigated) - San Bernardino-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Unmitigated	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.6235					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.6773					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0151	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Total	**5.3159**	**1.4900e-003**	**0.1621**	**1.0000e-005**		**5.8000e-004**	**5.8000e-004**		**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**		**0.3691**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.6235					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.6773					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0151	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Total	**5.3159**	**1.4900e-003**	**0.1621**	**1.0000e-005**		**5.8000e-004**	**5.8000e-004**		**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**		**0.3691**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Bedford Marketplace (Dirt Import Process - Mitigated)

San Bernardino-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Bank (with Drive-Through)	6.00	1000sqft	0.14	6,000.00	0
Day-Care Center	9.99	1000sqft	0.23	9,990.00	0
Other Asphalt Surfaces	408.85	1000sqft	9.39	408,852.00	0
Parking Lot	890.00	Space	8.17	356,000.00	0
Health Club	38.00	1000sqft	0.87	38,000.00	0
High Turnover (Sit Down Restaurant)	5.83	1000sqft	0.13	5,826.00	0
Hotel	135.00	Room	0.57	88,730.00	0
Quality Restaurant	13.20	1000sqft	0.30	13,200.00	0
User Defined Recreational	2.20	User Defined Unit	0.05	2,200.00	0
Automobile Care Center	3.60	1000sqft	0.08	3,600.00	0
Gasoline/Service Station	18.00	Pump	0.09	4,000.00	0
Regional Shopping Center	51.00	1000sqft	1.17	51,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Net Land Area per the Site Plan is +/-21.2 acres.

Construction Phase - The Dirt Import Process anticipated to 126 days.

Off-road Equipment - Hours are based on an 8-hour workday.

Off-road Equipment - Equipment adjusted per information provided by the Project Applicant.

Off-road Equipment - Equipment adjusted per information provided by the Project Applicant.

Trips and VMT - Hauling trips based on the amount of import and the 15 cubic yard hauling capacity.

Grading - For purposes of analysis, total acres graded per day is based on the equipment specific grading rates (CalEEMod Appendix A) and the equipment list.

Architectural Coating -

Vehicle Trips - Construction Run Only.

Energy Use - Construction Run Only.

Water And Wastewater - Construction Run Only.

Solid Waste - Construction Run Only.

Construction Off-road Equipment Mitigation - All equipment operating at >150 HP shall comply with EPA/CARB Tier 4 emissions standards

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	35.00	126.00
tblConstructionPhase	NumDays	10.00	126.00

tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	3.03	0.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	6.62	0.00
tblEnergyUse	LightingElect	5.44	0.00
tblEnergyUse	LightingElect	0.35	0.00
tblEnergyUse	LightingElect	6.62	0.00
tblEnergyUse	LightingElect	5.61	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	1.49	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	28.48	0.00
tblEnergyUse	NT24E	6.23	0.00
tblEnergyUse	NT24E	28.48	0.00
tblEnergyUse	NT24E	2.44	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	1.79	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	195.77	0.00
tblEnergyUse	NT24NG	4.86	0.00
tblEnergyUse	NT24NG	195.77	0.00

tblEnergyUse	NT24NG	0.30	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	2.78	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	12.38	0.00
tblEnergyUse	T24E	6.47	0.00
tblEnergyUse	T24E	12.38	0.00
tblEnergyUse	T24E	4.58	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	6.97	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	77.67	0.00
tblEnergyUse	T24NG	55.15	0.00
tblEnergyUse	T24NG	77.67	0.00
tblEnergyUse	T24NG	1.92	0.00
tblGrading	AcresOfGrading	378.00	441.00
tblGrading	AcresOfGrading	0.00	126.00
tblGrading	MaterialExported	0.00	440,000.00
tblLandUse	LandUseSquareFeet	408,850.00	408,852.00
tblLandUse	LandUseSquareFeet	5,830.00	5,826.00
tblLandUse	LandUseSquareFeet	196,020.00	88,730.00
tblLandUse	LandUseSquareFeet	0.00	2,200.00
tblLandUse	LandUseSquareFeet	2,541.15	4,000.00

tblLandUse	LotAcreage	8.01	8.17
tblLandUse	LotAcreage	4.50	0.57
tblLandUse	LotAcreage	0.00	0.05
tblLandUse	LotAcreage	0.06	0.09
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblSolidWaste	SolidWasteGenerationRate	13.75	0.00
tblSolidWaste	SolidWasteGenerationRate	5.60	0.00
tblSolidWaste	SolidWasteGenerationRate	12.99	0.00
tblSolidWaste	SolidWasteGenerationRate	9.70	0.00
tblSolidWaste	SolidWasteGenerationRate	216.60	0.00
tblSolidWaste	SolidWasteGenerationRate	69.38	0.00
tblSolidWaste	SolidWasteGenerationRate	73.91	0.00
tblSolidWaste	SolidWasteGenerationRate	12.04	0.00
tblSolidWaste	SolidWasteGenerationRate	53.55	0.00
tblTripsAndVMT	HaulingTripLength	20.00	6.00
tblTripsAndVMT	HaulingTripNumber	55,000.00	58,668.00
tblVehicleEF	HHD	1.24	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	3.46	7.82
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.92	2.4420e-003

tblVehicleEF	HHD	6,983.95	1,459.93
tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.07	7.65
tblVehicleEF	HHD	2.87	3.24
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004
tblVehicleEF	HHD	0.89	0.60
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	2.4200e-004	6.3700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004

tblVehicleEF	HHD	1.02	0.68
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4200e-004	6.3700e-004
tblVehicleEF	HHD	0.07	1.0000e-006
tblVehicleEF	HHD	1.17	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	2.52	7.65
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.80	2.2950e-003
tblVehicleEF	HHD	7,395.94	1,453.32
tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.97	7.40
tblVehicleEF	HHD	2.70	3.05
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	1.8400e-004	9.0000e-006

tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.84	0.62
tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.7000e-005	0.00
tblVehicleEF	HHD	1.8400e-004	9.0000e-006
tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.97	0.71
tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	1.34	0.03
tblVehicleEF	HHD	0.04	3.7740e-003
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	4.76	7.98
tblVehicleEF	HHD	0.58	0.36
tblVehicleEF	HHD	1.89	2.4140e-003
tblVehicleEF	HHD	6,415.00	1,454.79
tblVehicleEF	HHD	1,493.95	1,371.01
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	26.84	7.90
tblVehicleEF	HHD	2.83	3.15

tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.8160e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004
tblVehicleEF	HHD	0.96	0.56
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.08
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.06	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004
tblVehicleEF	HHD	1.10	0.64
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.09
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.07	1.0000e-006

tblVehicleEF	LDA	4.6640e-003	2.7950e-003
tblVehicleEF	LDA	6.4640e-003	0.06
tblVehicleEF	LDA	0.62	0.70
tblVehicleEF	LDA	1.32	2.22
tblVehicleEF	LDA	261.85	269.33
tblVehicleEF	LDA	59.28	55.48
tblVehicleEF	LDA	0.06	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.6230e-003	2.6640e-003
tblVehicleEF	LDA	6.1500e-004	5.4900e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.10	0.27
tblVehicleEF	LDA	5.3170e-003	3.2030e-003
tblVehicleEF	LDA	5.3900e-003	0.05

tblVehicleEF	LDA	0.76	0.86
tblVehicleEF	LDA	1.10	1.85
tblVehicleEF	LDA	286.52	294.16
tblVehicleEF	LDA	59.28	54.75
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.07	0.21
tblVehicleEF	LDA	2.8710e-003	2.9100e-003
tblVehicleEF	LDA	6.1100e-004	5.4200e-004
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.08	0.23
tblVehicleEF	LDA	4.5320e-003	2.7260e-003
tblVehicleEF	LDA	6.4200e-003	0.06
tblVehicleEF	LDA	0.58	0.67
tblVehicleEF	LDA	1.30	2.19

tblVehicleEF	LDA	256.02	263.51
tblVehicleEF	LDA	59.28	55.41
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.25
tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.5640e-003	2.6070e-003
tblVehicleEF	LDA	6.1500e-004	5.4800e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.25
tblVehicleEF	LDA	0.09	0.27
tblVehicleEF	LDT1	0.02	8.1890e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.71	1.63
tblVehicleEF	LDT1	4.02	2.54
tblVehicleEF	LDT1	323.73	319.09
tblVehicleEF	LDT1	72.77	67.44

tblVehicleEF	LDT1	0.18	0.15
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.29	0.48
tblVehicleEF	LDT1	3.2600e-003	3.1580e-003
tblVehicleEF	LDT1	7.9900e-004	6.6700e-004
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.06	0.05
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT1	0.02	9.2860e-003
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	2.05	1.97
tblVehicleEF	LDT1	3.30	2.10
tblVehicleEF	LDT1	352.65	345.09
tblVehicleEF	LDT1	72.77	66.47
tblVehicleEF	LDT1	0.16	0.13
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003

tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.40	0.44
tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.24	0.41
tblVehicleEF	LDT1	3.5540e-003	3.4150e-003
tblVehicleEF	LDT1	7.8600e-004	6.5800e-004
tblVehicleEF	LDT1	0.40	0.44
tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.06	0.06
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.26	0.44
tblVehicleEF	LDT1	0.01	7.9980e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.62	1.55
tblVehicleEF	LDT1	3.95	2.49
tblVehicleEF	LDT1	316.91	312.93
tblVehicleEF	LDT1	72.77	67.36
tblVehicleEF	LDT1	0.17	0.14
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003

tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.28	0.48
tblVehicleEF	LDT1	3.1900e-003	3.0970e-003
tblVehicleEF	LDT1	7.9800e-004	6.6700e-004
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13
tblVehicleEF	LDT1	0.05	0.05
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT2	6.9330e-003	4.8260e-003
tblVehicleEF	LDT2	9.2890e-003	0.08
tblVehicleEF	LDT2	0.85	1.06
tblVehicleEF	LDT2	1.85	2.89
tblVehicleEF	LDT2	363.70	344.02
tblVehicleEF	LDT2	81.97	72.94
tblVehicleEF	LDT2	0.10	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11

tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.13	0.38
tblVehicleEF	LDT2	3.6440e-003	3.4040e-003
tblVehicleEF	LDT2	8.5100e-004	7.2200e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.14	0.42
tblVehicleEF	LDT2	7.8730e-003	5.5090e-003
tblVehicleEF	LDT2	7.7350e-003	0.07
tblVehicleEF	LDT2	1.04	1.30
tblVehicleEF	LDT2	1.53	2.39
tblVehicleEF	LDT2	397.09	369.57
tblVehicleEF	LDT2	81.97	71.94
tblVehicleEF	LDT2	0.09	0.09
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19

tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	3.9810e-003	3.6570e-003
tblVehicleEF	LDT2	8.4600e-004	7.1200e-004
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.11	0.35
tblVehicleEF	LDT2	6.7430e-003	4.7100e-003
tblVehicleEF	LDT2	9.2200e-003	0.08
tblVehicleEF	LDT2	0.81	1.01
tblVehicleEF	LDT2	1.82	2.84
tblVehicleEF	LDT2	355.82	337.97
tblVehicleEF	LDT2	81.97	72.85
tblVehicleEF	LDT2	0.09	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.58

tblVehicleEF	LDT2	0.12	0.38
tblVehicleEF	LDT2	3.5650e-003	3.3440e-003
tblVehicleEF	LDT2	8.5100e-004	7.2100e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.08	0.58
tblVehicleEF	LDT2	0.14	0.41
tblVehicleEF	LHD1	5.4860e-003	4.9840e-003
tblVehicleEF	LHD1	0.01	7.1410e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.77	1.07
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.99
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.26	1.69
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01

tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.29	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6200e-004	1.0900e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD1	5.4860e-003	5.0000e-003
tblVehicleEF	LHD1	0.01	7.3180e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.18	0.99
tblVehicleEF	LHD1	2.58	1.00
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.98
tblVehicleEF	LHD1	30.92	10.87

tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.12	1.58
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.27	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0370e-003	6.3960e-003
tblVehicleEF	LHD1	3.5800e-004	1.0800e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.30	0.09

tblVehicleEF	LHD1	5.4860e-003	4.9870e-003
tblVehicleEF	LHD1	0.01	7.1590e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.72	1.05
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.96
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.22	1.66
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005

tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6100e-004	1.0800e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD2	3.8190e-003	3.4060e-003
tblVehicleEF	LHD2	5.2410e-003	4.5240e-003
tblVehicleEF	LHD2	9.1660e-003	0.01
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.29	0.64
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.51
tblVehicleEF	LHD2	24.89	7.96
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.69	1.81
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01

tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7300e-004	7.9000e-005
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.14	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4160e-003
tblVehicleEF	LHD2	5.3190e-003	4.5750e-003
tblVehicleEF	LHD2	8.7380e-003	9.6870e-003
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.56	0.62
tblVehicleEF	LHD2	1.21	0.60
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.89
tblVehicleEF	LHD2	0.12	0.12

tblVehicleEF	LHD2	1.59	1.70
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7100e-004	7.8000e-005
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4070e-003
tblVehicleEF	LHD2	5.2490e-003	4.5300e-003

tblVehicleEF	LHD2	9.0820e-003	0.01
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.27	0.63
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.94
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.67	1.78
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7200e-004	7.9000e-005
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003

tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.16	0.25
tblVehicleEF	MCY	21.02	21.16
tblVehicleEF	MCY	9.91	8.77
tblVehicleEF	MCY	167.12	211.16
tblVehicleEF	MCY	46.87	61.87
tblVehicleEF	MCY	1.17	1.17
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84
tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.26	2.26
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.17	1.92
tblVehicleEF	MCY	2.0790e-003	2.0900e-003
tblVehicleEF	MCY	6.9500e-004	6.1200e-004
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84

tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.76	2.76
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.37	2.08
tblVehicleEF	MCY	0.41	0.32
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	21.14	21.29
tblVehicleEF	MCY	9.06	7.97
tblVehicleEF	MCY	167.12	211.14
tblVehicleEF	MCY	46.87	59.68
tblVehicleEF	MCY	0.99	0.99
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.19	2.19
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	1.87	1.64
tblVehicleEF	MCY	2.0790e-003	2.0890e-003
tblVehicleEF	MCY	6.7100e-004	5.9100e-004
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.69	2.68

tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.03	1.78
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	20.06	20.18
tblVehicleEF	MCY	9.53	8.41
tblVehicleEF	MCY	167.12	209.47
tblVehicleEF	MCY	46.87	61.06
tblVehicleEF	MCY	1.13	1.13
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.22	2.22
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.10	1.84
tblVehicleEF	MCY	2.0630e-003	2.0730e-003
tblVehicleEF	MCY	6.8600e-004	6.0400e-004
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.71	2.71
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.28	2.00

tblVehicleEF	MDV	0.01	6.6050e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.55	1.33
tblVehicleEF	MDV	3.59	3.53
tblVehicleEF	MDV	498.66	425.70
tblVehicleEF	MDV	110.76	90.07
tblVehicleEF	MDV	0.20	0.14
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.28	0.50
tblVehicleEF	MDV	5.0000e-003	4.2090e-003
tblVehicleEF	MDV	1.1710e-003	8.9100e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MDV	0.02	7.4780e-003
tblVehicleEF	MDV	0.02	0.08

tblVehicleEF	MDV	1.87	1.60
tblVehicleEF	MDV	2.99	2.92
tblVehicleEF	MDV	542.90	452.84
tblVehicleEF	MDV	110.76	88.84
tblVehicleEF	MDV	0.18	0.12
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.24	0.42
tblVehicleEF	MDV	5.4470e-003	4.4780e-003
tblVehicleEF	MDV	1.1600e-003	8.7900e-004
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22
tblVehicleEF	MDV	0.06	0.05
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.26	0.46
tblVehicleEF	MDV	0.01	6.4310e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.47	1.25
tblVehicleEF	MDV	3.53	3.47

tblVehicleEF	MDV	488.33	419.25
tblVehicleEF	MDV	110.76	89.97
tblVehicleEF	MDV	0.19	0.13
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.13	0.61
tblVehicleEF	MDV	0.28	0.49
tblVehicleEF	MDV	4.8960e-003	4.1450e-003
tblVehicleEF	MDV	1.1700e-003	8.9000e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.13	0.61
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.60	0.37
tblVehicleEF	MH	6.96	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00

tblVehicleEF	MH	1.64	4.70
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.2000e-004	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.44	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.74	0.37
tblVehicleEF	MH	6.31	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00

tblVehicleEF	MH	1.50	4.42
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.37	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.0900e-004	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.41	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.61	0.37
tblVehicleEF	MH	6.87	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00

tblVehicleEF	MH	1.61	4.62
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.1900e-004	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.43	0.00
tblVehicleEF	MHD	0.02	3.2250e-003
tblVehicleEF	MHD	4.1450e-003	6.0340e-003
tblVehicleEF	MHD	0.06	8.8310e-003
tblVehicleEF	MHD	0.33	0.34
tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	6.00	1.03

tblVehicleEF	MHD	155.10	71.06
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.43
tblVehicleEF	MHD	0.63	0.61
tblVehicleEF	MHD	1.08	2.22
tblVehicleEF	MHD	4.3700e-004	2.0190e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	4.1800e-004	1.9320e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.11
tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.4910e-003	6.7400e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4400e-004	8.3000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.11

tblVehicleEF	MHD	0.40	0.05
tblVehicleEF	MHD	0.02	3.0610e-003
tblVehicleEF	MHD	4.2290e-003	6.0860e-003
tblVehicleEF	MHD	0.05	8.4200e-003
tblVehicleEF	MHD	0.24	0.28
tblVehicleEF	MHD	0.32	0.56
tblVehicleEF	MHD	5.61	0.96
tblVehicleEF	MHD	164.29	72.29
tblVehicleEF	MHD	1,105.72	1,029.54
tblVehicleEF	MHD	53.92	8.32
tblVehicleEF	MHD	0.65	0.62
tblVehicleEF	MHD	1.01	2.09
tblVehicleEF	MHD	3.6900e-004	1.7050e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	3.5300e-004	1.6310e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.35	0.04
tblVehicleEF	MHD	1.5770e-003	6.8600e-004
tblVehicleEF	MHD	0.01	9.8100e-003

tblVehicleEF	MHD	6.3800e-004	8.2000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.38	0.05
tblVehicleEF	MHD	0.02	3.4660e-003
tblVehicleEF	MHD	4.1530e-003	6.0380e-003
tblVehicleEF	MHD	0.06	8.7320e-003
tblVehicleEF	MHD	0.46	0.42
tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	5.90	1.02
tblVehicleEF	MHD	142.41	69.34
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.40
tblVehicleEF	MHD	0.60	0.60
tblVehicleEF	MHD	1.06	2.18
tblVehicleEF	MHD	5.3200e-004	2.4540e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	5.0900e-004	2.3480e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02

tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	7.0500e-004	3.2200e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.13
tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.3710e-003	6.5800e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4300e-004	8.3000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	7.0500e-004	3.2200e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.13
tblVehicleEF	MHD	0.39	0.05
tblVehicleEF	OBUS	0.01	9.3650e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.27	0.49
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.67	2.81
tblVehicleEF	OBUS	70.21	68.33
tblVehicleEF	OBUS	1,126.32	1,507.23
tblVehicleEF	OBUS	71.08	22.19
tblVehicleEF	OBUS	0.32	0.39
tblVehicleEF	OBUS	1.10	1.47
tblVehicleEF	OBUS	1.1300e-004	1.5090e-003

tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.0800e-004	1.4440e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.41	0.13
tblVehicleEF	OBUS	6.8200e-004	6.5300e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2800e-004	2.2000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	OBUS	0.01	9.3930e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.26	0.47
tblVehicleEF	OBUS	0.75	1.22

tblVehicleEF	OBUS	6.11	2.57
tblVehicleEF	OBUS	73.34	68.71
tblVehicleEF	OBUS	1,126.32	1,507.28
tblVehicleEF	OBUS	71.08	21.80
tblVehicleEF	OBUS	0.33	0.39
tblVehicleEF	OBUS	1.02	1.35
tblVehicleEF	OBUS	9.5000e-005	1.2750e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	9.1000e-005	1.2200e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.05	0.09
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.39	0.13
tblVehicleEF	OBUS	7.1200e-004	6.5600e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.1800e-004	2.1600e-004
tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.07	0.11

tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.42	0.14
tblVehicleEF	OBUS	0.01	9.3640e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.28	0.51
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.62	2.79
tblVehicleEF	OBUS	65.88	67.80
tblVehicleEF	OBUS	1,126.32	1,507.24
tblVehicleEF	OBUS	71.08	22.15
tblVehicleEF	OBUS	0.31	0.39
tblVehicleEF	OBUS	1.08	1.44
tblVehicleEF	OBUS	1.3700e-004	1.8320e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.3100e-004	1.7520e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.41	0.13
tblVehicleEF	OBUS	6.4100e-004	6.4800e-004

tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2700e-004	2.1900e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3980e-003
tblVehicleEF	SBUS	0.07	3.9120e-003
tblVehicleEF	SBUS	5.64	1.82
tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.49	0.54
tblVehicleEF	SBUS	1,270.71	336.96
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.11
tblVehicleEF	SBUS	12.46	3.45
tblVehicleEF	SBUS	5.17	5.36
tblVehicleEF	SBUS	0.01	4.4720e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	4.2790e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03

tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004
tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.68	0.19
tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.28	0.02
tblVehicleEF	SBUS	0.01	3.2020e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004
tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.31	0.02
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.4900e-003
tblVehicleEF	SBUS	0.06	3.2450e-003
tblVehicleEF	SBUS	5.48	1.78
tblVehicleEF	SBUS	0.72	0.64
tblVehicleEF	SBUS	3.76	0.38
tblVehicleEF	SBUS	1,335.64	345.46
tblVehicleEF	SBUS	1,144.20	1,143.58
tblVehicleEF	SBUS	36.06	2.85

tblVehicleEF	SBUS	12.86	3.52
tblVehicleEF	SBUS	4.84	5.03
tblVehicleEF	SBUS	0.01	3.7780e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	3.6140e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003
tblVehicleEF	SBUS	0.67	0.19
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.23	0.02
tblVehicleEF	SBUS	0.01	3.2820e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.2700e-004	2.8000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003
tblVehicleEF	SBUS	0.96	0.27
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.25	0.02

tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3930e-003
tblVehicleEF	SBUS	0.07	4.0100e-003
tblVehicleEF	SBUS	5.85	1.87
tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.54	0.56
tblVehicleEF	SBUS	1,181.05	325.23
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.14
tblVehicleEF	SBUS	11.91	3.35
tblVehicleEF	SBUS	5.09	5.28
tblVehicleEF	SBUS	0.02	5.4310e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.02	5.1960e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003
tblVehicleEF	SBUS	0.68	0.19
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.29	0.02
tblVehicleEF	SBUS	0.01	3.0910e-003

tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003
tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.32	0.03
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.79	32.64
tblVehicleEF	UBUS	14.93	1.46
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.41
tblVehicleEF	UBUS	6.43	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004

tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.19	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.6230e-003	1.7200e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004
tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.30	0.08
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.08	0.02
tblVehicleEF	UBUS	9.90	32.64
tblVehicleEF	UBUS	12.23	1.20
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	16.98
tblVehicleEF	UBUS	5.98	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	0.02	3.2040e-003

tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	0.67	0.06
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.06	0.06
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.5760e-003	1.6800e-004
tblVehicleEF	UBUS	0.02	3.2040e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	2.69	4.28
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.16	0.07
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.80	32.64
tblVehicleEF	UBUS	14.43	1.42
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.36
tblVehicleEF	UBUS	6.31	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003

tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004
tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.17	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.6140e-003	1.7200e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004
tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.28	0.08
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00

tblVehicleTrips	CC_TTP	48.00	0.00
tblVehicleTrips	CC_TTP	74.40	0.00
tblVehicleTrips	CC_TTP	82.30	0.00
tblVehicleTrips	CC_TTP	79.00	0.00
tblVehicleTrips	CC_TTP	64.10	0.00
tblVehicleTrips	CC_TTP	72.50	0.00
tblVehicleTrips	CC_TTP	61.60	0.00
tblVehicleTrips	CC_TTP	69.00	0.00
tblVehicleTrips	CC_TTP	64.70	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	5.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00

tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TTP	33.00	0.00
tblVehicleTrips	CW_TTP	6.60	0.00
tblVehicleTrips	CW_TTP	12.70	0.00
tblVehicleTrips	CW_TTP	2.00	0.00
tblVehicleTrips	CW_TTP	16.90	0.00
tblVehicleTrips	CW_TTP	8.50	0.00
tblVehicleTrips	CW_TTP	19.40	0.00
tblVehicleTrips	CW_TTP	12.00	0.00
tblVehicleTrips	CW_TTP	16.30	0.00
tblVehicleTrips	DV_TP	51.00	0.00
tblVehicleTrips	DV_TP	26.00	0.00
tblVehicleTrips	DV_TP	58.00	0.00

tblVehicleTrips	DV_TP	27.00	0.00
tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	DV_TP	20.00	0.00
tblVehicleTrips	DV_TP	38.00	0.00
tblVehicleTrips	DV_TP	18.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	PB_TP	28.00	0.00
tblVehicleTrips	PB_TP	47.00	0.00
tblVehicleTrips	PB_TP	14.00	0.00
tblVehicleTrips	PB_TP	59.00	0.00
tblVehicleTrips	PB_TP	9.00	0.00
tblVehicleTrips	PB_TP	43.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	44.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	21.00	0.00
tblVehicleTrips	PR_TP	27.00	0.00
tblVehicleTrips	PR_TP	28.00	0.00
tblVehicleTrips	PR_TP	14.00	0.00
tblVehicleTrips	PR_TP	52.00	0.00
tblVehicleTrips	PR_TP	37.00	0.00
tblVehicleTrips	PR_TP	58.00	0.00
tblVehicleTrips	PR_TP	38.00	0.00
tblVehicleTrips	PR_TP	54.00	0.00
tblVehicleTrips	ST_TR	23.72	0.00
tblVehicleTrips	ST_TR	86.32	0.00
tblVehicleTrips	ST_TR	6.21	0.00

tblVehicleTrips	ST_TR	168.56	0.00
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	158.37	0.00
tblVehicleTrips	ST_TR	8.19	0.00
tblVehicleTrips	ST_TR	94.36	0.00
tblVehicleTrips	ST_TR	49.97	0.00
tblVehicleTrips	SU_TR	11.88	0.00
tblVehicleTrips	SU_TR	31.90	0.00
tblVehicleTrips	SU_TR	5.83	0.00
tblVehicleTrips	SU_TR	168.56	0.00
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	131.84	0.00
tblVehicleTrips	SU_TR	5.95	0.00
tblVehicleTrips	SU_TR	72.16	0.00
tblVehicleTrips	SU_TR	25.24	0.00
tblVehicleTrips	WD_TR	23.72	0.00
tblVehicleTrips	WD_TR	148.15	0.00
tblVehicleTrips	WD_TR	74.06	0.00
tblVehicleTrips	WD_TR	168.56	0.00
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	127.15	0.00
tblVehicleTrips	WD_TR	8.17	0.00
tblVehicleTrips	WD_TR	89.95	0.00
tblVehicleTrips	WD_TR	42.70	0.00
tblWater	IndoorWaterUseRate	338,691.99	0.00
tblWater	IndoorWaterUseRate	237,737.51	0.00
tblWater	IndoorWaterUseRate	428,466.78	0.00

tblWater	IndoorWaterUseRate	239,074.00	0.00
tblWater	IndoorWaterUseRate	2,247,439.47	0.00
tblWater	IndoorWaterUseRate	1,769,601.54	0.00
tblWater	IndoorWaterUseRate	3,424,513.95	0.00
tblWater	IndoorWaterUseRate	4,006,645.00	0.00
tblWater	IndoorWaterUseRate	3,777,698.60	0.00
tblWater	OutdoorWaterUseRate	207,585.41	0.00
tblWater	OutdoorWaterUseRate	145,710.09	0.00
tblWater	OutdoorWaterUseRate	1,101,771.72	0.00
tblWater	OutdoorWaterUseRate	146,529.23	0.00
tblWater	OutdoorWaterUseRate	1,377,462.90	0.00
tblWater	OutdoorWaterUseRate	112,953.29	0.00
tblWater	OutdoorWaterUseRate	380,501.55	0.00
tblWater	OutdoorWaterUseRate	255,743.30	0.00
tblWater	OutdoorWaterUseRate	2,315,363.66	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	8.8590	149.1104	54.1525	0.2621	19.9200	3.4715	23.3914	7.9365	3.1980	11.1344	0.0000	26,875.7674	26,875.7674	4.6571	0.0000	26,992.1957
Maximum	**8.8590**	**149.1104**	**54.1525**	**0.2621**	**19.9200**	**3.4715**	**23.3914**	**7.9365**	**3.1980**	**11.1344**	**0.0000**	**26,875.7674**	**26,875.7674**	**4.6571**	**0.0000**	**26,992.1957**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	4.4897	94.5192	51.6864	0.2621	9.4211	1.0889	10.5099	3.5472	1.0142	4.5614	0.0000	26,875.7674	26,875.7674	4.6571	0.0000	26,992.1957
Maximum	**4.4897**	**94.5192**	**51.6864**	**0.2621**	**9.4211**	**1.0889**	**10.5099**	**3.5472**	**1.0142**	**4.5614**	**0.0000**	**26,875.7674**	**26,875.7674**	**4.6571**	**0.0000**	**26,992.1957**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**49.32**	**36.61**	**4.55**	**0.00**	**52.71**	**68.63**	**55.07**	**55.31**	**68.29**	**59.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**5.3160**	**1.4900e-003**	**0.1621**	**1.0000e-005**	**0.0000**	**5.8000e-004**	**5.8000e-004**	**0.0000**	**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**	**0.0000**	**0.3691**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**5.3160**	**1.4900e-003**	**0.1621**	**1.0000e-005**	**0.0000**	**5.8000e-004**	**5.8000e-004**	**0.0000**	**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**	**0.0000**	**0.3691**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Import Activities	Site Preparation	1/1/2020	6/24/2020	5	126	
2	Grading	Grading	1/1/2020	6/24/2020	5	126	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 441

Acres of Paving: 17.56

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Import Activities	Off-Highway Trucks	1	8.00	402	0.38
Import Activities	Other Construction Equipment	1	8.00	172	0.42
Import Activities	Rubber Tired Dozers	1	8.00	247	0.40
Import Activities	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Excavators	0	8.00	158	0.38
Grading	Graders	0	8.00	187	0.41
Grading	Off-Highway Trucks	1	8.00	402	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	3	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Import Activities	4	10.00	0.00	58,668.00	14.70	6.90	6.00	LD_Mix	HDT_Mix	HHDT
Grading	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Import Activities - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.4775	0.0000	7.4775	3.4845	0.0000	3.4845			0.0000			0.0000
Off-Road	2.4461	24.9992	14.3435	0.0310		1.1949	1.1949		1.0993	1.0993		3,005.5371	3,005.5371	0.9721		3,029.8384
Total	**2.4461**	**24.9992**	**14.3435**	**0.0310**	**7.4775**	**1.1949**	**8.6724**	**3.4845**	**1.0993**	**4.5839**		**3,005.5371**	**3,005.5371**	**0.9721**		**3,029.8384**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.5660	71.1194	8.4572	0.1613	2.4515	0.1145	2.5660	0.6728	0.1095	0.7823		17,103.3011	17,103.3011	1.5727		17,142.6173
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0546	0.0350	0.4497	1.1400e-003	0.1118	7.3000e-004	0.1125	0.0296	6.7000e-004	0.0303		113.0084	113.0084	3.4500e-003		113.0947
Total	**1.6206**	**71.1544**	**8.9069**	**0.1624**	**2.5633**	**0.1152**	**2.6785**	**0.7024**	**0.1102**	**0.8126**		**17,216.3095**	**17,216.3095**	**1.5761**		**17,255.7119**

3.2 Import Activities - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9162	0.0000	2.9162	1.3590	0.0000	1.3590			0.0000			0.0000
Off-Road	1.4712	14.1201	14.0454	0.0310		0.6539	0.6539		0.6027	0.6027	0.0000	3,005.5371	3,005.5371	0.9721		3,029.8384
Total	**1.4712**	**14.1201**	**14.0454**	**0.0310**	**2.9162**	**0.6539**	**3.5701**	**1.3590**	**0.6027**	**1.9616**	**0.0000**	**3,005.5371**	**3,005.5371**	**0.9721**		**3,029.8384**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.5660	71.1194	8.4572	0.1613	2.4515	0.1145	2.5660	0.6728	0.1095	0.7823		17,103.3011	17,103.3011	1.5727		17,142.6173
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0546	0.0350	0.4497	1.1400e-003	0.1118	7.3000e-004	0.1125	0.0296	6.7000e-004	0.0303		113.0084	113.0084	3.4500e-003		113.0947
Total	**1.6206**	**71.1544**	**8.9069**	**0.1624**	**2.5633**	**0.1152**	**2.6785**	**0.7024**	**0.1102**	**0.8126**		**17,216.3095**	**17,216.3095**	**1.5761**		**17,255.7119**

3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.7338	0.0000	9.7338	3.7110	0.0000	3.7110			0.0000			0.0000
Off-Road	4.7213	52.9112	30.3175	0.0672		2.1604	2.1604		1.9876	1.9876		6,507.0099	6,507.0099	2.1045		6,559.6223
Total	**4.7213**	**52.9112**	**30.3175**	**0.0672**	**9.7338**	**2.1604**	**11.8943**	**3.7110**	**1.9876**	**5.6986**		**6,507.0099**	**6,507.0099**	**2.1045**		**6,559.6223**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0710	0.0455	0.5846	1.4800e-003	0.1453	9.5000e-004	0.1463	0.0385	8.8000e-004	0.0394		146.9109	146.9109	4.4800e-003		147.0231
Total	**0.0710**	**0.0455**	**0.5846**	**1.4800e-003**	**0.1453**	**9.5000e-004**	**0.1463**	**0.0385**	**8.8000e-004**	**0.0394**		**146.9109**	**146.9109**	**4.4800e-003**		**147.0231**

3.3 Grading - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7962	0.0000	3.7962	1.4473	0.0000	1.4473			0.0000			0.0000
Off-Road	1.3269	9.1992	28.1494	0.0672		0.3189	0.3189		0.3004	0.3004	0.0000	6,507.0099	6,507.0099	2.1045		6,559.6223
Total	**1.3269**	**9.1992**	**28.1494**	**0.0672**	**3.7962**	**0.3189**	**4.1151**	**1.4473**	**0.3004**	**1.7477**	**0.0000**	**6,507.0099**	**6,507.0099**	**2.1045**		**6,559.6223**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0710	0.0455	0.5846	1.4800e-003	0.1453	9.5000e-004	0.1463	0.0385	8.8000e-004	0.0394		146.9109	146.9109	4.4800e-003		147.0231
Total	**0.0710**	**0.0455**	**0.5846**	**1.4800e-003**	**0.1453**	**9.5000e-004**	**0.1463**	**0.0385**	**8.8000e-004**	**0.0394**		**146.9109**	**146.9109**	**4.4800e-003**		**147.0231**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	0.00	0.00	0.00		
Bank (with Drive-Through)	0.00	0.00	0.00		
Day-Care Center	0.00	0.00	0.00		
Gasoline/Service Station	0.00	0.00	0.00		
Health Club	0.00	0.00	0.00		
High Turnover (Sit Down Restaurant)	0.00	0.00	0.00		
Hotel	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Quality Restaurant	0.00	0.00	0.00		
Regional Shopping Center	0.00	0.00	0.00		
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Bank (with Drive-Through)	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Day-Care Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Gasoline/Service Station	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Health Club	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
High Turnover (Sit Down	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Hotel	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Quality Restaurant	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
User Defined Recreational	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Bank (with Drive-Through)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Day-Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Gasoline/Service Station	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Health Club	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
High Turnover (Sit Down Restaurant)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Hotel	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Other Asphalt Surfaces	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Parking Lot	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Quality Restaurant	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Regional Shopping Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
User Defined Recreational	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Bedford Marketplace (Dirt Import Process - Mitigated) - San Bernardino-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Unmitigated	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.6235					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.6773					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0151	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Total	**5.3159**	**1.4900e-003**	**0.1621**	**1.0000e-005**		**5.8000e-004**	**5.8000e-004**		**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**		**0.3691**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.6235					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.6773					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0151	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Total	**5.3159**	**1.4900e-003**	**0.1621**	**1.0000e-005**		**5.8000e-004**	**5.8000e-004**		**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**		**0.3691**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Bedford Marketplace (Dirt Import Process - Mitigated)

San Bernardino-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Bank (with Drive-Through)	6.00	1000sqft	0.14	6,000.00	0
Day-Care Center	9.99	1000sqft	0.23	9,990.00	0
Other Asphalt Surfaces	408.85	1000sqft	9.39	408,852.00	0
Parking Lot	890.00	Space	8.17	356,000.00	0
Health Club	38.00	1000sqft	0.87	38,000.00	0
High Turnover (Sit Down Restaurant)	5.83	1000sqft	0.13	5,826.00	0
Hotel	135.00	Room	0.57	88,730.00	0
Quality Restaurant	13.20	1000sqft	0.30	13,200.00	0
User Defined Recreational	2.20	User Defined Unit	0.05	2,200.00	0
Automobile Care Center	3.60	1000sqft	0.08	3,600.00	0
Gasoline/Service Station	18.00	Pump	0.09	4,000.00	0
Regional Shopping Center	51.00	1000sqft	1.17	51,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Net Land Area per the Site Plan is +/-21.2 acres.

Construction Phase - The Dirt Import Process anticipated to 126 days.

Off-road Equipment - Hours are based on an 8-hour workday.

Off-road Equipment - Equipment adjusted per information provided by the Project Applicant.

Off-road Equipment - Equipment adjusted per information provided by the Project Applicant.

Trips and VMT - Hauling trips based on the amount of import and the 15 cubic yard hauling capacity.

Grading - For purposes of analysis, total acres graded per day is based on the equipment specific grading rates (CalEEMod Appendix A) and the equipment list.

Architectural Coating -

Vehicle Trips - Construction Run Only.

Energy Use - Construction Run Only.

Water And Wastewater - Construction Run Only.

Solid Waste - Construction Run Only.

Construction Off-road Equipment Mitigation - All equipment operating at >150 HP shall comply with EPA/CARB Tier 4 emissions standards

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	35.00	126.00
tblConstructionPhase	NumDays	10.00	126.00

tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	3.03	0.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	6.62	0.00
tblEnergyUse	LightingElect	5.44	0.00
tblEnergyUse	LightingElect	0.35	0.00
tblEnergyUse	LightingElect	6.62	0.00
tblEnergyUse	LightingElect	5.61	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	1.49	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	28.48	0.00
tblEnergyUse	NT24E	6.23	0.00
tblEnergyUse	NT24E	28.48	0.00
tblEnergyUse	NT24E	2.44	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	1.79	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	195.77	0.00
tblEnergyUse	NT24NG	4.86	0.00
tblEnergyUse	NT24NG	195.77	0.00

tblEnergyUse	NT24NG	0.30	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	2.78	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	12.38	0.00
tblEnergyUse	T24E	6.47	0.00
tblEnergyUse	T24E	12.38	0.00
tblEnergyUse	T24E	4.58	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	6.97	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	77.67	0.00
tblEnergyUse	T24NG	55.15	0.00
tblEnergyUse	T24NG	77.67	0.00
tblEnergyUse	T24NG	1.92	0.00
tblGrading	AcresOfGrading	378.00	441.00
tblGrading	AcresOfGrading	0.00	126.00
tblGrading	MaterialExported	0.00	440,000.00
tblLandUse	LandUseSquareFeet	408,850.00	408,852.00
tblLandUse	LandUseSquareFeet	5,830.00	5,826.00
tblLandUse	LandUseSquareFeet	196,020.00	88,730.00
tblLandUse	LandUseSquareFeet	0.00	2,200.00
tblLandUse	LandUseSquareFeet	2,541.15	4,000.00

tblLandUse	LotAcreage	8.01	8.17
tblLandUse	LotAcreage	4.50	0.57
tblLandUse	LotAcreage	0.00	0.05
tblLandUse	LotAcreage	0.06	0.09
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblSolidWaste	SolidWasteGenerationRate	13.75	0.00
tblSolidWaste	SolidWasteGenerationRate	5.60	0.00
tblSolidWaste	SolidWasteGenerationRate	12.99	0.00
tblSolidWaste	SolidWasteGenerationRate	9.70	0.00
tblSolidWaste	SolidWasteGenerationRate	216.60	0.00
tblSolidWaste	SolidWasteGenerationRate	69.38	0.00
tblSolidWaste	SolidWasteGenerationRate	73.91	0.00
tblSolidWaste	SolidWasteGenerationRate	12.04	0.00
tblSolidWaste	SolidWasteGenerationRate	53.55	0.00
tblTripsAndVMT	HaulingTripLength	20.00	6.00
tblTripsAndVMT	HaulingTripNumber	55,000.00	58,668.00
tblVehicleEF	HHD	1.24	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	3.46	7.82
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.92	2.4420e-003

tblVehicleEF	HHD	6,983.95	1,459.93
tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.07	7.65
tblVehicleEF	HHD	2.87	3.24
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004
tblVehicleEF	HHD	0.89	0.60
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	2.4200e-004	6.3700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004

tblVehicleEF	HHD	1.02	0.68
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4200e-004	6.3700e-004
tblVehicleEF	HHD	0.07	1.0000e-006
tblVehicleEF	HHD	1.17	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	2.52	7.65
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.80	2.2950e-003
tblVehicleEF	HHD	7,395.94	1,453.32
tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.97	7.40
tblVehicleEF	HHD	2.70	3.05
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	1.8400e-004	9.0000e-006

tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.84	0.62
tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.7000e-005	0.00
tblVehicleEF	HHD	1.8400e-004	9.0000e-006
tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.97	0.71
tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	1.34	0.03
tblVehicleEF	HHD	0.04	3.7740e-003
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	4.76	7.98
tblVehicleEF	HHD	0.58	0.36
tblVehicleEF	HHD	1.89	2.4140e-003
tblVehicleEF	HHD	6,415.00	1,454.79
tblVehicleEF	HHD	1,493.95	1,371.01
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	26.84	7.90
tblVehicleEF	HHD	2.83	3.15

tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.8160e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004
tblVehicleEF	HHD	0.96	0.56
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.08
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.06	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004
tblVehicleEF	HHD	1.10	0.64
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.09
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.07	1.0000e-006

tblVehicleEF	LDA	4.6640e-003	2.7950e-003
tblVehicleEF	LDA	6.4640e-003	0.06
tblVehicleEF	LDA	0.62	0.70
tblVehicleEF	LDA	1.32	2.22
tblVehicleEF	LDA	261.85	269.33
tblVehicleEF	LDA	59.28	55.48
tblVehicleEF	LDA	0.06	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.6230e-003	2.6640e-003
tblVehicleEF	LDA	6.1500e-004	5.4900e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.10	0.27
tblVehicleEF	LDA	5.3170e-003	3.2030e-003
tblVehicleEF	LDA	5.3900e-003	0.05

tblVehicleEF	LDA	0.76	0.86
tblVehicleEF	LDA	1.10	1.85
tblVehicleEF	LDA	286.52	294.16
tblVehicleEF	LDA	59.28	54.75
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.07	0.21
tblVehicleEF	LDA	2.8710e-003	2.9100e-003
tblVehicleEF	LDA	6.1100e-004	5.4200e-004
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.08	0.23
tblVehicleEF	LDA	4.5320e-003	2.7260e-003
tblVehicleEF	LDA	6.4200e-003	0.06
tblVehicleEF	LDA	0.58	0.67
tblVehicleEF	LDA	1.30	2.19

tblVehicleEF	LDA	256.02	263.51
tblVehicleEF	LDA	59.28	55.41
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.25
tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.5640e-003	2.6070e-003
tblVehicleEF	LDA	6.1500e-004	5.4800e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.25
tblVehicleEF	LDA	0.09	0.27
tblVehicleEF	LDT1	0.02	8.1890e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.71	1.63
tblVehicleEF	LDT1	4.02	2.54
tblVehicleEF	LDT1	323.73	319.09
tblVehicleEF	LDT1	72.77	67.44

tblVehicleEF	LDT1	0.18	0.15
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.29	0.48
tblVehicleEF	LDT1	3.2600e-003	3.1580e-003
tblVehicleEF	LDT1	7.9900e-004	6.6700e-004
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.06	0.05
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT1	0.02	9.2860e-003
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	2.05	1.97
tblVehicleEF	LDT1	3.30	2.10
tblVehicleEF	LDT1	352.65	345.09
tblVehicleEF	LDT1	72.77	66.47
tblVehicleEF	LDT1	0.16	0.13
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003

tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.40	0.44
tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.24	0.41
tblVehicleEF	LDT1	3.5540e-003	3.4150e-003
tblVehicleEF	LDT1	7.8600e-004	6.5800e-004
tblVehicleEF	LDT1	0.40	0.44
tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.06	0.06
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.26	0.44
tblVehicleEF	LDT1	0.01	7.9980e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.62	1.55
tblVehicleEF	LDT1	3.95	2.49
tblVehicleEF	LDT1	316.91	312.93
tblVehicleEF	LDT1	72.77	67.36
tblVehicleEF	LDT1	0.17	0.14
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003

tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.28	0.48
tblVehicleEF	LDT1	3.1900e-003	3.0970e-003
tblVehicleEF	LDT1	7.9800e-004	6.6700e-004
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13
tblVehicleEF	LDT1	0.05	0.05
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT2	6.9330e-003	4.8260e-003
tblVehicleEF	LDT2	9.2890e-003	0.08
tblVehicleEF	LDT2	0.85	1.06
tblVehicleEF	LDT2	1.85	2.89
tblVehicleEF	LDT2	363.70	344.02
tblVehicleEF	LDT2	81.97	72.94
tblVehicleEF	LDT2	0.10	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11

tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.13	0.38
tblVehicleEF	LDT2	3.6440e-003	3.4040e-003
tblVehicleEF	LDT2	8.5100e-004	7.2200e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.14	0.42
tblVehicleEF	LDT2	7.8730e-003	5.5090e-003
tblVehicleEF	LDT2	7.7350e-003	0.07
tblVehicleEF	LDT2	1.04	1.30
tblVehicleEF	LDT2	1.53	2.39
tblVehicleEF	LDT2	397.09	369.57
tblVehicleEF	LDT2	81.97	71.94
tblVehicleEF	LDT2	0.09	0.09
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19

tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	3.9810e-003	3.6570e-003
tblVehicleEF	LDT2	8.4600e-004	7.1200e-004
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.11	0.35
tblVehicleEF	LDT2	6.7430e-003	4.7100e-003
tblVehicleEF	LDT2	9.2200e-003	0.08
tblVehicleEF	LDT2	0.81	1.01
tblVehicleEF	LDT2	1.82	2.84
tblVehicleEF	LDT2	355.82	337.97
tblVehicleEF	LDT2	81.97	72.85
tblVehicleEF	LDT2	0.09	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.58

tblVehicleEF	LDT2	0.12	0.38
tblVehicleEF	LDT2	3.5650e-003	3.3440e-003
tblVehicleEF	LDT2	8.5100e-004	7.2100e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.08	0.58
tblVehicleEF	LDT2	0.14	0.41
tblVehicleEF	LHD1	5.4860e-003	4.9840e-003
tblVehicleEF	LHD1	0.01	7.1410e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.77	1.07
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.99
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.26	1.69
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01

tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.29	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6200e-004	1.0900e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD1	5.4860e-003	5.0000e-003
tblVehicleEF	LHD1	0.01	7.3180e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.18	0.99
tblVehicleEF	LHD1	2.58	1.00
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.98
tblVehicleEF	LHD1	30.92	10.87

tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.12	1.58
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.27	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0370e-003	6.3960e-003
tblVehicleEF	LHD1	3.5800e-004	1.0800e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.30	0.09

tblVehicleEF	LHD1	5.4860e-003	4.9870e-003
tblVehicleEF	LHD1	0.01	7.1590e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.72	1.05
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.96
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.22	1.66
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005

tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6100e-004	1.0800e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD2	3.8190e-003	3.4060e-003
tblVehicleEF	LHD2	5.2410e-003	4.5240e-003
tblVehicleEF	LHD2	9.1660e-003	0.01
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.29	0.64
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.51
tblVehicleEF	LHD2	24.89	7.96
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.69	1.81
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01

tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7300e-004	7.9000e-005
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.14	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4160e-003
tblVehicleEF	LHD2	5.3190e-003	4.5750e-003
tblVehicleEF	LHD2	8.7380e-003	9.6870e-003
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.56	0.62
tblVehicleEF	LHD2	1.21	0.60
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.89
tblVehicleEF	LHD2	0.12	0.12

tblVehicleEF	LHD2	1.59	1.70
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7100e-004	7.8000e-005
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4070e-003
tblVehicleEF	LHD2	5.2490e-003	4.5300e-003

tblVehicleEF	LHD2	9.0820e-003	0.01
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.27	0.63
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.94
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.67	1.78
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7200e-004	7.9000e-005
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003

tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.16	0.25
tblVehicleEF	MCY	21.02	21.16
tblVehicleEF	MCY	9.91	8.77
tblVehicleEF	MCY	167.12	211.16
tblVehicleEF	MCY	46.87	61.87
tblVehicleEF	MCY	1.17	1.17
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84
tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.26	2.26
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.17	1.92
tblVehicleEF	MCY	2.0790e-003	2.0900e-003
tblVehicleEF	MCY	6.9500e-004	6.1200e-004
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84

tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.76	2.76
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.37	2.08
tblVehicleEF	MCY	0.41	0.32
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	21.14	21.29
tblVehicleEF	MCY	9.06	7.97
tblVehicleEF	MCY	167.12	211.14
tblVehicleEF	MCY	46.87	59.68
tblVehicleEF	MCY	0.99	0.99
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.19	2.19
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	1.87	1.64
tblVehicleEF	MCY	2.0790e-003	2.0890e-003
tblVehicleEF	MCY	6.7100e-004	5.9100e-004
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.69	2.68

tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.03	1.78
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	20.06	20.18
tblVehicleEF	MCY	9.53	8.41
tblVehicleEF	MCY	167.12	209.47
tblVehicleEF	MCY	46.87	61.06
tblVehicleEF	MCY	1.13	1.13
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.22	2.22
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.10	1.84
tblVehicleEF	MCY	2.0630e-003	2.0730e-003
tblVehicleEF	MCY	6.8600e-004	6.0400e-004
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.71	2.71
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.28	2.00

tblVehicleEF	MDV	0.01	6.6050e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.55	1.33
tblVehicleEF	MDV	3.59	3.53
tblVehicleEF	MDV	498.66	425.70
tblVehicleEF	MDV	110.76	90.07
tblVehicleEF	MDV	0.20	0.14
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.28	0.50
tblVehicleEF	MDV	5.0000e-003	4.2090e-003
tblVehicleEF	MDV	1.1710e-003	8.9100e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MDV	0.02	7.4780e-003
tblVehicleEF	MDV	0.02	0.08

tblVehicleEF	MDV	1.87	1.60
tblVehicleEF	MDV	2.99	2.92
tblVehicleEF	MDV	542.90	452.84
tblVehicleEF	MDV	110.76	88.84
tblVehicleEF	MDV	0.18	0.12
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.24	0.42
tblVehicleEF	MDV	5.4470e-003	4.4780e-003
tblVehicleEF	MDV	1.1600e-003	8.7900e-004
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22
tblVehicleEF	MDV	0.06	0.05
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.26	0.46
tblVehicleEF	MDV	0.01	6.4310e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.47	1.25
tblVehicleEF	MDV	3.53	3.47

tblVehicleEF	MDV	488.33	419.25
tblVehicleEF	MDV	110.76	89.97
tblVehicleEF	MDV	0.19	0.13
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.13	0.61
tblVehicleEF	MDV	0.28	0.49
tblVehicleEF	MDV	4.8960e-003	4.1450e-003
tblVehicleEF	MDV	1.1700e-003	8.9000e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.13	0.61
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.60	0.37
tblVehicleEF	MH	6.96	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00

tblVehicleEF	MH	1.64	4.70
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.2000e-004	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.44	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.74	0.37
tblVehicleEF	MH	6.31	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00

tblVehicleEF	MH	1.50	4.42
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.37	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.0900e-004	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.41	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.61	0.37
tblVehicleEF	MH	6.87	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00

tblVehicleEF	MH	1.61	4.62
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.1900e-004	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.43	0.00
tblVehicleEF	MHD	0.02	3.2250e-003
tblVehicleEF	MHD	4.1450e-003	6.0340e-003
tblVehicleEF	MHD	0.06	8.8310e-003
tblVehicleEF	MHD	0.33	0.34
tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	6.00	1.03

tblVehicleEF	MHD	155.10	71.06
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.43
tblVehicleEF	MHD	0.63	0.61
tblVehicleEF	MHD	1.08	2.22
tblVehicleEF	MHD	4.3700e-004	2.0190e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	4.1800e-004	1.9320e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.11
tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.4910e-003	6.7400e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4400e-004	8.3000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.11

tblVehicleEF	MHD	0.40	0.05
tblVehicleEF	MHD	0.02	3.0610e-003
tblVehicleEF	MHD	4.2290e-003	6.0860e-003
tblVehicleEF	MHD	0.05	8.4200e-003
tblVehicleEF	MHD	0.24	0.28
tblVehicleEF	MHD	0.32	0.56
tblVehicleEF	MHD	5.61	0.96
tblVehicleEF	MHD	164.29	72.29
tblVehicleEF	MHD	1,105.72	1,029.54
tblVehicleEF	MHD	53.92	8.32
tblVehicleEF	MHD	0.65	0.62
tblVehicleEF	MHD	1.01	2.09
tblVehicleEF	MHD	3.6900e-004	1.7050e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	3.5300e-004	1.6310e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.35	0.04
tblVehicleEF	MHD	1.5770e-003	6.8600e-004
tblVehicleEF	MHD	0.01	9.8100e-003

tblVehicleEF	MHD	6.3800e-004	8.2000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.38	0.05
tblVehicleEF	MHD	0.02	3.4660e-003
tblVehicleEF	MHD	4.1530e-003	6.0380e-003
tblVehicleEF	MHD	0.06	8.7320e-003
tblVehicleEF	MHD	0.46	0.42
tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	5.90	1.02
tblVehicleEF	MHD	142.41	69.34
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.40
tblVehicleEF	MHD	0.60	0.60
tblVehicleEF	MHD	1.06	2.18
tblVehicleEF	MHD	5.3200e-004	2.4540e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	5.0900e-004	2.3480e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02

tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	7.0500e-004	3.2200e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.13
tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.3710e-003	6.5800e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4300e-004	8.3000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	7.0500e-004	3.2200e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.13
tblVehicleEF	MHD	0.39	0.05
tblVehicleEF	OBUS	0.01	9.3650e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.27	0.49
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.67	2.81
tblVehicleEF	OBUS	70.21	68.33
tblVehicleEF	OBUS	1,126.32	1,507.23
tblVehicleEF	OBUS	71.08	22.19
tblVehicleEF	OBUS	0.32	0.39
tblVehicleEF	OBUS	1.10	1.47
tblVehicleEF	OBUS	1.1300e-004	1.5090e-003

tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.0800e-004	1.4440e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.41	0.13
tblVehicleEF	OBUS	6.8200e-004	6.5300e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2800e-004	2.2000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	OBUS	0.01	9.3930e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.26	0.47
tblVehicleEF	OBUS	0.75	1.22

tblVehicleEF	OBUS	6.11	2.57
tblVehicleEF	OBUS	73.34	68.71
tblVehicleEF	OBUS	1,126.32	1,507.28
tblVehicleEF	OBUS	71.08	21.80
tblVehicleEF	OBUS	0.33	0.39
tblVehicleEF	OBUS	1.02	1.35
tblVehicleEF	OBUS	9.5000e-005	1.2750e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	9.1000e-005	1.2200e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.05	0.09
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.39	0.13
tblVehicleEF	OBUS	7.1200e-004	6.5600e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.1800e-004	2.1600e-004
tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.07	0.11

tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.42	0.14
tblVehicleEF	OBUS	0.01	9.3640e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.28	0.51
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.62	2.79
tblVehicleEF	OBUS	65.88	67.80
tblVehicleEF	OBUS	1,126.32	1,507.24
tblVehicleEF	OBUS	71.08	22.15
tblVehicleEF	OBUS	0.31	0.39
tblVehicleEF	OBUS	1.08	1.44
tblVehicleEF	OBUS	1.3700e-004	1.8320e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.3100e-004	1.7520e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.41	0.13
tblVehicleEF	OBUS	6.4100e-004	6.4800e-004

tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2700e-004	2.1900e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3980e-003
tblVehicleEF	SBUS	0.07	3.9120e-003
tblVehicleEF	SBUS	5.64	1.82
tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.49	0.54
tblVehicleEF	SBUS	1,270.71	336.96
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.11
tblVehicleEF	SBUS	12.46	3.45
tblVehicleEF	SBUS	5.17	5.36
tblVehicleEF	SBUS	0.01	4.4720e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	4.2790e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03

tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004
tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.68	0.19
tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.28	0.02
tblVehicleEF	SBUS	0.01	3.2020e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004
tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.31	0.02
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.4900e-003
tblVehicleEF	SBUS	0.06	3.2450e-003
tblVehicleEF	SBUS	5.48	1.78
tblVehicleEF	SBUS	0.72	0.64
tblVehicleEF	SBUS	3.76	0.38
tblVehicleEF	SBUS	1,335.64	345.46
tblVehicleEF	SBUS	1,144.20	1,143.58
tblVehicleEF	SBUS	36.06	2.85

tblVehicleEF	SBUS	12.86	3.52
tblVehicleEF	SBUS	4.84	5.03
tblVehicleEF	SBUS	0.01	3.7780e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	3.6140e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003
tblVehicleEF	SBUS	0.67	0.19
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.23	0.02
tblVehicleEF	SBUS	0.01	3.2820e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.2700e-004	2.8000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003
tblVehicleEF	SBUS	0.96	0.27
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.25	0.02

tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3930e-003
tblVehicleEF	SBUS	0.07	4.0100e-003
tblVehicleEF	SBUS	5.85	1.87
tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.54	0.56
tblVehicleEF	SBUS	1,181.05	325.23
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.14
tblVehicleEF	SBUS	11.91	3.35
tblVehicleEF	SBUS	5.09	5.28
tblVehicleEF	SBUS	0.02	5.4310e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.02	5.1960e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003
tblVehicleEF	SBUS	0.68	0.19
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.29	0.02
tblVehicleEF	SBUS	0.01	3.0910e-003

tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003
tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.32	0.03
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.79	32.64
tblVehicleEF	UBUS	14.93	1.46
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.41
tblVehicleEF	UBUS	6.43	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004

tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.19	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.6230e-003	1.7200e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004
tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.30	0.08
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.08	0.02
tblVehicleEF	UBUS	9.90	32.64
tblVehicleEF	UBUS	12.23	1.20
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	16.98
tblVehicleEF	UBUS	5.98	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	0.02	3.2040e-003

tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	0.67	0.06
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.06	0.06
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.5760e-003	1.6800e-004
tblVehicleEF	UBUS	0.02	3.2040e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	2.69	4.28
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.16	0.07
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.80	32.64
tblVehicleEF	UBUS	14.43	1.42
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.36
tblVehicleEF	UBUS	6.31	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003

tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004
tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.17	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.6140e-003	1.7200e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004
tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.28	0.08
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00

tblVehicleTrips	CC_TTP	48.00	0.00
tblVehicleTrips	CC_TTP	74.40	0.00
tblVehicleTrips	CC_TTP	82.30	0.00
tblVehicleTrips	CC_TTP	79.00	0.00
tblVehicleTrips	CC_TTP	64.10	0.00
tblVehicleTrips	CC_TTP	72.50	0.00
tblVehicleTrips	CC_TTP	61.60	0.00
tblVehicleTrips	CC_TTP	69.00	0.00
tblVehicleTrips	CC_TTP	64.70	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	5.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00

tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TTP	33.00	0.00
tblVehicleTrips	CW_TTP	6.60	0.00
tblVehicleTrips	CW_TTP	12.70	0.00
tblVehicleTrips	CW_TTP	2.00	0.00
tblVehicleTrips	CW_TTP	16.90	0.00
tblVehicleTrips	CW_TTP	8.50	0.00
tblVehicleTrips	CW_TTP	19.40	0.00
tblVehicleTrips	CW_TTP	12.00	0.00
tblVehicleTrips	CW_TTP	16.30	0.00
tblVehicleTrips	DV_TP	51.00	0.00
tblVehicleTrips	DV_TP	26.00	0.00
tblVehicleTrips	DV_TP	58.00	0.00

tblVehicleTrips	DV_TP	27.00	0.00
tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	DV_TP	20.00	0.00
tblVehicleTrips	DV_TP	38.00	0.00
tblVehicleTrips	DV_TP	18.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	PB_TP	28.00	0.00
tblVehicleTrips	PB_TP	47.00	0.00
tblVehicleTrips	PB_TP	14.00	0.00
tblVehicleTrips	PB_TP	59.00	0.00
tblVehicleTrips	PB_TP	9.00	0.00
tblVehicleTrips	PB_TP	43.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	44.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	21.00	0.00
tblVehicleTrips	PR_TP	27.00	0.00
tblVehicleTrips	PR_TP	28.00	0.00
tblVehicleTrips	PR_TP	14.00	0.00
tblVehicleTrips	PR_TP	52.00	0.00
tblVehicleTrips	PR_TP	37.00	0.00
tblVehicleTrips	PR_TP	58.00	0.00
tblVehicleTrips	PR_TP	38.00	0.00
tblVehicleTrips	PR_TP	54.00	0.00
tblVehicleTrips	ST_TR	23.72	0.00
tblVehicleTrips	ST_TR	86.32	0.00
tblVehicleTrips	ST_TR	6.21	0.00

tblVehicleTrips	ST_TR	168.56	0.00
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	158.37	0.00
tblVehicleTrips	ST_TR	8.19	0.00
tblVehicleTrips	ST_TR	94.36	0.00
tblVehicleTrips	ST_TR	49.97	0.00
tblVehicleTrips	SU_TR	11.88	0.00
tblVehicleTrips	SU_TR	31.90	0.00
tblVehicleTrips	SU_TR	5.83	0.00
tblVehicleTrips	SU_TR	168.56	0.00
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	131.84	0.00
tblVehicleTrips	SU_TR	5.95	0.00
tblVehicleTrips	SU_TR	72.16	0.00
tblVehicleTrips	SU_TR	25.24	0.00
tblVehicleTrips	WD_TR	23.72	0.00
tblVehicleTrips	WD_TR	148.15	0.00
tblVehicleTrips	WD_TR	74.06	0.00
tblVehicleTrips	WD_TR	168.56	0.00
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	127.15	0.00
tblVehicleTrips	WD_TR	8.17	0.00
tblVehicleTrips	WD_TR	89.95	0.00
tblVehicleTrips	WD_TR	42.70	0.00
tblWater	IndoorWaterUseRate	338,691.99	0.00
tblWater	IndoorWaterUseRate	237,737.51	0.00
tblWater	IndoorWaterUseRate	428,466.78	0.00

tblWater	IndoorWaterUseRate	239,074.00	0.00
tblWater	IndoorWaterUseRate	2,247,439.47	0.00
tblWater	IndoorWaterUseRate	1,769,601.54	0.00
tblWater	IndoorWaterUseRate	3,424,513.95	0.00
tblWater	IndoorWaterUseRate	4,006,645.00	0.00
tblWater	IndoorWaterUseRate	3,777,698.60	0.00
tblWater	OutdoorWaterUseRate	207,585.41	0.00
tblWater	OutdoorWaterUseRate	145,710.09	0.00
tblWater	OutdoorWaterUseRate	1,101,771.72	0.00
tblWater	OutdoorWaterUseRate	146,529.23	0.00
tblWater	OutdoorWaterUseRate	1,377,462.90	0.00
tblWater	OutdoorWaterUseRate	112,953.29	0.00
tblWater	OutdoorWaterUseRate	380,501.55	0.00
tblWater	OutdoorWaterUseRate	255,743.30	0.00
tblWater	OutdoorWaterUseRate	2,315,363.66	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	8.9906	147.7032	56.4531	0.2523	19.9200	3.4761	23.3961	7.9365	3.2024	11.1389	0.0000	25,838.0420	25,838.0420	4.8346	0.0000	25,958.9080
Maximum	**8.9906**	**147.7032**	**56.4531**	**0.2523**	**19.9200**	**3.4761**	**23.3961**	**7.9365**	**3.2024**	**11.1389**	**0.0000**	**25,838.0420**	**25,838.0420**	**4.8346**	**0.0000**	**25,958.9080**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	4.6212	93.1120	53.9869	0.2523	9.4211	1.0935	10.5146	3.5472	1.0186	4.5658	0.0000	25,838.0420	25,838.0420	4.8346	0.0000	25,958.9080
Maximum	**4.6212**	**93.1120**	**53.9869**	**0.2523**	**9.4211**	**1.0935**	**10.5146**	**3.5472**	**1.0186**	**4.5658**	**0.0000**	**25,838.0420**	**25,838.0420**	**4.8346**	**0.0000**	**25,958.9080**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**48.60**	**36.96**	**4.37**	**0.00**	**52.71**	**68.54**	**55.06**	**55.31**	**68.19**	**59.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**5.3160**	**1.4900e-003**	**0.1621**	**1.0000e-005**	**0.0000**	**5.8000e-004**	**5.8000e-004**	**0.0000**	**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**	**0.0000**	**0.3691**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**5.3160**	**1.4900e-003**	**0.1621**	**1.0000e-005**	**0.0000**	**5.8000e-004**	**5.8000e-004**	**0.0000**	**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**	**0.0000**	**0.3691**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Import Activities	Site Preparation	1/1/2020	6/24/2020	5	126	
2	Grading	Grading	1/1/2020	6/24/2020	5	126	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 441

Acres of Paving: 17.56

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Import Activities	Off-Highway Trucks	1	8.00	402	0.38
Import Activities	Other Construction Equipment	1	8.00	172	0.42
Import Activities	Rubber Tired Dozers	1	8.00	247	0.40
Import Activities	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Excavators	0	8.00	158	0.38
Grading	Graders	0	8.00	187	0.41
Grading	Off-Highway Trucks	1	8.00	402	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	3	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Import Activities	4	10.00	0.00	58,668.00	14.70	6.90	6.00	LD_Mix	HDT_Mix	HHDT
Grading	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Import Activities - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.4775	0.0000	7.4775	3.4845	0.0000	3.4845			0.0000			0.0000
Off-Road	2.4461	24.9992	14.3435	0.0310		1.1949	1.1949		1.0993	1.0993		3,005.5371	3,005.5371	0.9721		3,029.8384
Total	**2.4461**	**24.9992**	**14.3435**	**0.0310**	**7.4775**	**1.1949**	**8.6724**	**3.4845**	**1.0993**	**4.5839**		**3,005.5371**	**3,005.5371**	**0.9721**		**3,029.8384**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.6976	69.7079	10.9420	0.1518	2.4515	0.1191	2.5706	0.6728	0.1140	0.7867		16,092.3326	16,092.3326	1.7511		16,136.1108
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0546	0.0369	0.3696	1.0200e-003	0.1118	7.3000e-004	0.1125	0.0296	6.7000e-004	0.0303		101.3750	101.3750	3.0300e-003		101.4506
Total	**1.7522**	**69.7448**	**11.3116**	**0.1528**	**2.5633**	**0.1198**	**2.6832**	**0.7024**	**0.1146**	**0.8170**		**16,193.7076**	**16,193.7076**	**1.7542**		**16,237.5615**

3.2 Import Activities - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9162	0.0000	2.9162	1.3590	0.0000	1.3590			0.0000			0.0000
Off-Road	1.4712	14.1201	14.0454	0.0310		0.6539	0.6539		0.6027	0.6027	0.0000	3,005.5371	3,005.5371	0.9721		3,029.8384
Total	**1.4712**	**14.1201**	**14.0454**	**0.0310**	**2.9162**	**0.6539**	**3.5701**	**1.3590**	**0.6027**	**1.9616**	**0.0000**	**3,005.5371**	**3,005.5371**	**0.9721**		**3,029.8384**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.6976	69.7079	10.9420	0.1518	2.4515	0.1191	2.5706	0.6728	0.1140	0.7867		16,092.3326	16,092.3326	1.7511		16,136.1108
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0546	0.0369	0.3696	1.0200e-003	0.1118	7.3000e-004	0.1125	0.0296	6.7000e-004	0.0303		101.3750	101.3750	3.0300e-003		101.4506
Total	**1.7522**	**69.7448**	**11.3116**	**0.1528**	**2.5633**	**0.1198**	**2.6832**	**0.7024**	**0.1146**	**0.8170**		**16,193.7076**	**16,193.7076**	**1.7542**		**16,237.5615**

3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.7338	0.0000	9.7338	3.7110	0.0000	3.7110			0.0000			0.0000
Off-Road	4.7213	52.9112	30.3175	0.0672		2.1604	2.1604		1.9876	1.9876		6,507.0099	6,507.0099	2.1045		6,559.6223
Total	**4.7213**	**52.9112**	**30.3175**	**0.0672**	**9.7338**	**2.1604**	**11.8943**	**3.7110**	**1.9876**	**5.6986**		**6,507.0099**	**6,507.0099**	**2.1045**		**6,559.6223**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0710	0.0479	0.4805	1.3200e-003	0.1453	9.5000e-004	0.1463	0.0385	8.8000e-004	0.0394		131.7875	131.7875	3.9300e-003		131.8858
Total	**0.0710**	**0.0479**	**0.4805**	**1.3200e-003**	**0.1453**	**9.5000e-004**	**0.1463**	**0.0385**	**8.8000e-004**	**0.0394**		**131.7875**	**131.7875**	**3.9300e-003**		**131.8858**

3.3 Grading - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7962	0.0000	3.7962	1.4473	0.0000	1.4473			0.0000			0.0000
Off-Road	1.3269	9.1992	28.1494	0.0672		0.3189	0.3189		0.3004	0.3004	0.0000	6,507.0099	6,507.0099	2.1045		6,559.6223
Total	**1.3269**	**9.1992**	**28.1494**	**0.0672**	**3.7962**	**0.3189**	**4.1151**	**1.4473**	**0.3004**	**1.7477**	**0.0000**	**6,507.0099**	**6,507.0099**	**2.1045**		**6,559.6223**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0710	0.0479	0.4805	1.3200e-003	0.1453	9.5000e-004	0.1463	0.0385	8.8000e-004	0.0394		131.7875	131.7875	3.9300e-003		131.8858
Total	**0.0710**	**0.0479**	**0.4805**	**1.3200e-003**	**0.1453**	**9.5000e-004**	**0.1463**	**0.0385**	**8.8000e-004**	**0.0394**		**131.7875**	**131.7875**	**3.9300e-003**		**131.8858**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	0.00	0.00	0.00		
Bank (with Drive-Through)	0.00	0.00	0.00		
Day-Care Center	0.00	0.00	0.00		
Gasoline/Service Station	0.00	0.00	0.00		
Health Club	0.00	0.00	0.00		
High Turnover (Sit Down Restaurant)	0.00	0.00	0.00		
Hotel	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Quality Restaurant	0.00	0.00	0.00		
Regional Shopping Center	0.00	0.00	0.00		
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Bank (with Drive-Through)	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Day-Care Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Gasoline/Service Station	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Health Club	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
High Turnover (Sit Down	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Hotel	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Quality Restaurant	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
User Defined Recreational	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Bank (with Drive-Through)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Day-Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Gasoline/Service Station	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Health Club	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
High Turnover (Sit Down Restaurant)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Hotel	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Other Asphalt Surfaces	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Parking Lot	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Quality Restaurant	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Regional Shopping Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
User Defined Recreational	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Bedford Marketplace (Dirt Import Process - Mitigated) - San Bernardino-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Unmitigated	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.6235					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.6773					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0151	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Total	**5.3159**	**1.4900e-003**	**0.1621**	**1.0000e-005**		**5.8000e-004**	**5.8000e-004**		**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**		**0.3691**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.6235					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.6773					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0151	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Total	**5.3159**	**1.4900e-003**	**0.1621**	**1.0000e-005**		**5.8000e-004**	**5.8000e-004**		**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**		**0.3691**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ATTACHMENT B

PROPOSED PROJECT CALEEMOD OPERATIONS EMISSIONS MODEL OUTPUTS

Bedford Marketplace (Operations)

San Bernardino-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Bank (with Drive-Through)	6.00	1000sqft	0.14	6,000.00	0
Day-Care Center	9.99	1000sqft	0.23	9,990.00	0
Other Asphalt Surfaces	408.85	1000sqft	9.39	408,852.00	0
Parking Lot	890.00	Space	8.17	356,000.00	0
Health Club	38.00	1000sqft	0.87	38,000.00	0
High Turnover (Sit Down Restaurant)	5.83	1000sqft	0.13	5,826.00	0
Hotel	135.00	Room	0.57	88,730.00	0
Quality Restaurant	13.20	1000sqft	0.30	13,200.00	0
User Defined Recreational	2.20	User Defined Unit	0.05	2,200.00	0
Automobile Care Center	3.60	1000sqft	0.08	3,600.00	0
Gasoline/Service Station	18.00	Pump	0.09	4,000.00	0
Regional Shopping Center	51.00	1000sqft	1.17	51,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Net Land Area per the Site Plan is +/-21.2 acres.

Construction Phase - Operations Run Only.

Off-road Equipment - Hours are based on an 8-hour workday.

Off-road Equipment - Operations Run Only.

Trips and VMT - Operations Run Only.

Grading -

Architectural Coating - Rule 1113

Vehicle Trips - Trip Rates based on information provided in the TIA.

Energy Use - Energy rates for User Defined Recreational (Coffee/Shop use) reflect the CalEEMod default rates for Fast-Food Restaurant with Drive Thru.

Water And Wastewater - Water rates adjusted to assume that half of the trips to the car wash will use approximately 30 gallons of water

Solid Waste -

Construction Off-road Equipment Mitigation -

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	3.03	2.12
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	6.62	4.63
tblEnergyUse	LightingElect	5.44	3.81

tblEnergyUse	LightingElect	6.62	4.63
tblEnergyUse	LightingElect	5.61	3.93
tblEnergyUse	LightingElect	0.00	4.63
tblEnergyUse	NT24E	0.00	28.48
tblEnergyUse	NT24NG	0.00	195.77
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	2.78	1.95
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	12.38	8.67
tblEnergyUse	T24E	6.47	4.53
tblEnergyUse	T24E	12.38	8.67
tblEnergyUse	T24E	4.58	3.21
tblEnergyUse	T24E	0.00	8.67
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	6.97	4.88
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	77.67	54.37
tblEnergyUse	T24NG	55.15	38.61
tblEnergyUse	T24NG	77.67	54.37
tblEnergyUse	T24NG	1.92	1.34
tblEnergyUse	T24NG	0.00	54.37
tblLandUse	LandUseSquareFeet	408,850.00	408,852.00
tblLandUse	LandUseSquareFeet	5,830.00	5,826.00

tblLandUse	LandUseSquareFeet	196,020.00	88,730.00
tblLandUse	LandUseSquareFeet	0.00	2,200.00
tblLandUse	LandUseSquareFeet	2,541.15	4,000.00
tblLandUse	LotAcreage	8.01	8.17
tblLandUse	LotAcreage	4.50	0.57
tblLandUse	LotAcreage	0.00	0.05
tblLandUse	LotAcreage	0.06	0.09
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblVehicleEF	HHD	1.24	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	3.46	7.82
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.92	2.4420e-003
tblVehicleEF	HHD	6,983.95	1,459.93
tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.07	7.65
tblVehicleEF	HHD	2.87	3.24
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03

tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004
tblVehicleEF	HHD	0.89	0.60
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	2.4200e-004	6.3700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004
tblVehicleEF	HHD	1.02	0.68
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4200e-004	6.3700e-004
tblVehicleEF	HHD	0.07	1.0000e-006
tblVehicleEF	HHD	1.17	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	2.52	7.65
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.80	2.2950e-003
tblVehicleEF	HHD	7,395.94	1,453.32

tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.97	7.40
tblVehicleEF	HHD	2.70	3.05
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	1.8400e-004	9.0000e-006
tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.84	0.62
tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.7000e-005	0.00
tblVehicleEF	HHD	1.8400e-004	9.0000e-006
tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.97	0.71

tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	1.34	0.03
tblVehicleEF	HHD	0.04	3.7740e-003
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	4.76	7.98
tblVehicleEF	HHD	0.58	0.36
tblVehicleEF	HHD	1.89	2.4140e-003
tblVehicleEF	HHD	6,415.00	1,454.79
tblVehicleEF	HHD	1,493.95	1,371.01
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	26.84	7.90
tblVehicleEF	HHD	2.83	3.15
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.8160e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004

tblVehicleEF	HHD	0.96	0.56
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.08
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.06	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004
tblVehicleEF	HHD	1.10	0.64
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.09
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.07	1.0000e-006
tblVehicleEF	LDA	4.6640e-003	2.7950e-003
tblVehicleEF	LDA	6.4640e-003	0.06
tblVehicleEF	LDA	0.62	0.70
tblVehicleEF	LDA	1.32	2.22
tblVehicleEF	LDA	261.85	269.33
tblVehicleEF	LDA	59.28	55.48
tblVehicleEF	LDA	0.06	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07

tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.6230e-003	2.6640e-003
tblVehicleEF	LDA	6.1500e-004	5.4900e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.10	0.27
tblVehicleEF	LDA	5.3170e-003	3.2030e-003
tblVehicleEF	LDA	5.3900e-003	0.05
tblVehicleEF	LDA	0.76	0.86
tblVehicleEF	LDA	1.10	1.85
tblVehicleEF	LDA	286.52	294.16
tblVehicleEF	LDA	59.28	54.75
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11

tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.07	0.21
tblVehicleEF	LDA	2.8710e-003	2.9100e-003
tblVehicleEF	LDA	6.1100e-004	5.4200e-004
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.08	0.23
tblVehicleEF	LDA	4.5320e-003	2.7260e-003
tblVehicleEF	LDA	6.4200e-003	0.06
tblVehicleEF	LDA	0.58	0.67
tblVehicleEF	LDA	1.30	2.19
tblVehicleEF	LDA	256.02	263.51
tblVehicleEF	LDA	59.28	55.41
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.25

tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.5640e-003	2.6070e-003
tblVehicleEF	LDA	6.1500e-004	5.4800e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.25
tblVehicleEF	LDA	0.09	0.27
tblVehicleEF	LDT1	0.02	8.1890e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.71	1.63
tblVehicleEF	LDT1	4.02	2.54
tblVehicleEF	LDT1	323.73	319.09
tblVehicleEF	LDT1	72.77	67.44
tblVehicleEF	LDT1	0.18	0.15
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.29	0.48
tblVehicleEF	LDT1	3.2600e-003	3.1580e-003

tblVehicleEF	LDT1	7.9900e-004	6.6700e-004
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.06	0.05
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT1	0.02	9.2860e-003
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	2.05	1.97
tblVehicleEF	LDT1	3.30	2.10
tblVehicleEF	LDT1	352.65	345.09
tblVehicleEF	LDT1	72.77	66.47
tblVehicleEF	LDT1	0.16	0.13
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.40	0.44
tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.24	0.41
tblVehicleEF	LDT1	3.5540e-003	3.4150e-003
tblVehicleEF	LDT1	7.8600e-004	6.5800e-004
tblVehicleEF	LDT1	0.40	0.44

tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.06	0.06
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.26	0.44
tblVehicleEF	LDT1	0.01	7.9980e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.62	1.55
tblVehicleEF	LDT1	3.95	2.49
tblVehicleEF	LDT1	316.91	312.93
tblVehicleEF	LDT1	72.77	67.36
tblVehicleEF	LDT1	0.17	0.14
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.28	0.48
tblVehicleEF	LDT1	3.1900e-003	3.0970e-003
tblVehicleEF	LDT1	7.9800e-004	6.6700e-004
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13

tblVehicleEF	LDT1	0.05	0.05
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT2	6.9330e-003	4.8260e-003
tblVehicleEF	LDT2	9.2890e-003	0.08
tblVehicleEF	LDT2	0.85	1.06
tblVehicleEF	LDT2	1.85	2.89
tblVehicleEF	LDT2	363.70	344.02
tblVehicleEF	LDT2	81.97	72.94
tblVehicleEF	LDT2	0.10	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.13	0.38
tblVehicleEF	LDT2	3.6440e-003	3.4040e-003
tblVehicleEF	LDT2	8.5100e-004	7.2200e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50

tblVehicleEF	LDT2	0.14	0.42
tblVehicleEF	LDT2	7.8730e-003	5.5090e-003
tblVehicleEF	LDT2	7.7350e-003	0.07
tblVehicleEF	LDT2	1.04	1.30
tblVehicleEF	LDT2	1.53	2.39
tblVehicleEF	LDT2	397.09	369.57
tblVehicleEF	LDT2	81.97	71.94
tblVehicleEF	LDT2	0.09	0.09
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	3.9810e-003	3.6570e-003
tblVehicleEF	LDT2	8.4600e-004	7.1200e-004
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.11	0.35
tblVehicleEF	LDT2	6.7430e-003	4.7100e-003

tblVehicleEF	LDT2	9.2200e-003	0.08
tblVehicleEF	LDT2	0.81	1.01
tblVehicleEF	LDT2	1.82	2.84
tblVehicleEF	LDT2	355.82	337.97
tblVehicleEF	LDT2	81.97	72.85
tblVehicleEF	LDT2	0.09	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.58
tblVehicleEF	LDT2	0.12	0.38
tblVehicleEF	LDT2	3.5650e-003	3.3440e-003
tblVehicleEF	LDT2	8.5100e-004	7.2100e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.08	0.58
tblVehicleEF	LDT2	0.14	0.41
tblVehicleEF	LHD1	5.4860e-003	4.9840e-003
tblVehicleEF	LHD1	0.01	7.1410e-003
tblVehicleEF	LHD1	0.02	0.02

tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.77	1.07
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.99
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.26	1.69
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.29	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6200e-004	1.0900e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003

tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD1	5.4860e-003	5.0000e-003
tblVehicleEF	LHD1	0.01	7.3180e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.18	0.99
tblVehicleEF	LHD1	2.58	1.00
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.98
tblVehicleEF	LHD1	30.92	10.87
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.12	1.58
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11

tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.27	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0370e-003	6.3960e-003
tblVehicleEF	LHD1	3.5800e-004	1.0800e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.30	0.09
tblVehicleEF	LHD1	5.4860e-003	4.9870e-003
tblVehicleEF	LHD1	0.01	7.1590e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.72	1.05
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.96
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.22	1.66
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004

tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6100e-004	1.0800e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD2	3.8190e-003	3.4060e-003
tblVehicleEF	LHD2	5.2410e-003	4.5240e-003
tblVehicleEF	LHD2	9.1660e-003	0.01

tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.29	0.64
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.51
tblVehicleEF	LHD2	24.89	7.96
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.69	1.81
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7300e-004	7.9000e-005
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05

tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.14	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4160e-003
tblVehicleEF	LHD2	5.3190e-003	4.5750e-003
tblVehicleEF	LHD2	8.7380e-003	9.6870e-003
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.56	0.62
tblVehicleEF	LHD2	1.21	0.60
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.89
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.59	1.70
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02

tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7100e-004	7.8000e-005
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4070e-003
tblVehicleEF	LHD2	5.2490e-003	4.5300e-003
tblVehicleEF	LHD2	9.0820e-003	0.01
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.27	0.63
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.94
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.67	1.78
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01

tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7200e-004	7.9000e-005
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.16	0.25
tblVehicleEF	MCY	21.02	21.16
tblVehicleEF	MCY	9.91	8.77
tblVehicleEF	MCY	167.12	211.16
tblVehicleEF	MCY	46.87	61.87

tblVehicleEF	MCY	1.17	1.17
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84
tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.26	2.26
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.17	1.92
tblVehicleEF	MCY	2.0790e-003	2.0900e-003
tblVehicleEF	MCY	6.9500e-004	6.1200e-004
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84
tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.76	2.76
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.37	2.08
tblVehicleEF	MCY	0.41	0.32
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	21.14	21.29
tblVehicleEF	MCY	9.06	7.97
tblVehicleEF	MCY	167.12	211.14
tblVehicleEF	MCY	46.87	59.68
tblVehicleEF	MCY	0.99	0.99
tblVehicleEF	MCY	1.8190e-003	1.7890e-003

tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.19	2.19
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	1.87	1.64
tblVehicleEF	MCY	2.0790e-003	2.0890e-003
tblVehicleEF	MCY	6.7100e-004	5.9100e-004
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.69	2.68
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.03	1.78
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	20.06	20.18
tblVehicleEF	MCY	9.53	8.41
tblVehicleEF	MCY	167.12	209.47
tblVehicleEF	MCY	46.87	61.06
tblVehicleEF	MCY	1.13	1.13
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003

tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.22	2.22
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.10	1.84
tblVehicleEF	MCY	2.0630e-003	2.0730e-003
tblVehicleEF	MCY	6.8600e-004	6.0400e-004
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.71	2.71
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.28	2.00
tblVehicleEF	MDV	0.01	6.6050e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.55	1.33
tblVehicleEF	MDV	3.59	3.53
tblVehicleEF	MDV	498.66	425.70
tblVehicleEF	MDV	110.76	90.07
tblVehicleEF	MDV	0.20	0.14
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12

tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.28	0.50
tblVehicleEF	MDV	5.0000e-003	4.2090e-003
tblVehicleEF	MDV	1.1710e-003	8.9100e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MDV	0.02	7.4780e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.87	1.60
tblVehicleEF	MDV	2.99	2.92
tblVehicleEF	MDV	542.90	452.84
tblVehicleEF	MDV	110.76	88.84
tblVehicleEF	MDV	0.18	0.12
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22

tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.24	0.42
tblVehicleEF	MDV	5.4470e-003	4.4780e-003
tblVehicleEF	MDV	1.1600e-003	8.7900e-004
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22
tblVehicleEF	MDV	0.06	0.05
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.26	0.46
tblVehicleEF	MDV	0.01	6.4310e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.47	1.25
tblVehicleEF	MDV	3.53	3.47
tblVehicleEF	MDV	488.33	419.25
tblVehicleEF	MDV	110.76	89.97
tblVehicleEF	MDV	0.19	0.13
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.13	0.61

tblVehicleEF	MDV	0.28	0.49
tblVehicleEF	MDV	4.8960e-003	4.1450e-003
tblVehicleEF	MDV	1.1700e-003	8.9000e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.13	0.61
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.60	0.37
tblVehicleEF	MH	6.96	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.64	4.70
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00

tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.2000e-004	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.44	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.74	0.37
tblVehicleEF	MH	6.31	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.50	4.42
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00

tblVehicleEF	MH	0.37	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.0900e-004	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.41	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.61	0.37
tblVehicleEF	MH	6.87	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.61	4.62
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00

tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.1900e-004	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.43	0.00
tblVehicleEF	MHD	0.02	3.2250e-003
tblVehicleEF	MHD	4.1450e-003	6.0340e-003
tblVehicleEF	MHD	0.06	8.8310e-003
tblVehicleEF	MHD	0.33	0.34
tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	6.00	1.03
tblVehicleEF	MHD	155.10	71.06
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.43
tblVehicleEF	MHD	0.63	0.61
tblVehicleEF	MHD	1.08	2.22
tblVehicleEF	MHD	4.3700e-004	2.0190e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	4.1800e-004	1.9320e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004

tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.11
tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.4910e-003	6.7400e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4400e-004	8.3000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.11
tblVehicleEF	MHD	0.40	0.05
tblVehicleEF	MHD	0.02	3.0610e-003
tblVehicleEF	MHD	4.2290e-003	6.0860e-003
tblVehicleEF	MHD	0.05	8.4200e-003
tblVehicleEF	MHD	0.24	0.28
tblVehicleEF	MHD	0.32	0.56
tblVehicleEF	MHD	5.61	0.96
tblVehicleEF	MHD	164.29	72.29
tblVehicleEF	MHD	1,105.72	1,029.54
tblVehicleEF	MHD	53.92	8.32
tblVehicleEF	MHD	0.65	0.62
tblVehicleEF	MHD	1.01	2.09

tblVehicleEF	MHD	3.6900e-004	1.7050e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	3.5300e-004	1.6310e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.35	0.04
tblVehicleEF	MHD	1.5770e-003	6.8600e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.3800e-004	8.2000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.38	0.05
tblVehicleEF	MHD	0.02	3.4660e-003
tblVehicleEF	MHD	4.1530e-003	6.0380e-003
tblVehicleEF	MHD	0.06	8.7320e-003
tblVehicleEF	MHD	0.46	0.42

tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	5.90	1.02
tblVehicleEF	MHD	142.41	69.34
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.40
tblVehicleEF	MHD	0.60	0.60
tblVehicleEF	MHD	1.06	2.18
tblVehicleEF	MHD	5.3200e-004	2.4540e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	5.0900e-004	2.3480e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	7.0500e-004	3.2200e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.13
tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.3710e-003	6.5800e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4300e-004	8.3000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	7.0500e-004	3.2200e-004

tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.13
tblVehicleEF	MHD	0.39	0.05
tblVehicleEF	OBUS	0.01	9.3650e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.27	0.49
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.67	2.81
tblVehicleEF	OBUS	70.21	68.33
tblVehicleEF	OBUS	1,126.32	1,507.23
tblVehicleEF	OBUS	71.08	22.19
tblVehicleEF	OBUS	0.32	0.39
tblVehicleEF	OBUS	1.10	1.47
tblVehicleEF	OBUS	1.1300e-004	1.5090e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.0800e-004	1.4440e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.41	0.13

tblVehicleEF	OBUS	6.8200e-004	6.5300e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2800e-004	2.2000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	OBUS	0.01	9.3930e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.26	0.47
tblVehicleEF	OBUS	0.75	1.22
tblVehicleEF	OBUS	6.11	2.57
tblVehicleEF	OBUS	73.34	68.71
tblVehicleEF	OBUS	1,126.32	1,507.28
tblVehicleEF	OBUS	71.08	21.80
tblVehicleEF	OBUS	0.33	0.39
tblVehicleEF	OBUS	1.02	1.35
tblVehicleEF	OBUS	9.5000e-005	1.2750e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	9.1000e-005	1.2200e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004

tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.05	0.09
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.39	0.13
tblVehicleEF	OBUS	7.1200e-004	6.5600e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.1800e-004	2.1600e-004
tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.07	0.11
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.42	0.14
tblVehicleEF	OBUS	0.01	9.3640e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.28	0.51
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.62	2.79
tblVehicleEF	OBUS	65.88	67.80
tblVehicleEF	OBUS	1,126.32	1,507.24
tblVehicleEF	OBUS	71.08	22.15
tblVehicleEF	OBUS	0.31	0.39

tblVehicleEF	OBUS	1.08	1.44
tblVehicleEF	OBUS	1.3700e-004	1.8320e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.3100e-004	1.7520e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.41	0.13
tblVehicleEF	OBUS	6.4100e-004	6.4800e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2700e-004	2.1900e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3980e-003
tblVehicleEF	SBUS	0.07	3.9120e-003

tblVehicleEF	SBUS	5.64	1.82
tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.49	0.54
tblVehicleEF	SBUS	1,270.71	336.96
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.11
tblVehicleEF	SBUS	12.46	3.45
tblVehicleEF	SBUS	5.17	5.36
tblVehicleEF	SBUS	0.01	4.4720e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	4.2790e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004
tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.68	0.19
tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.28	0.02
tblVehicleEF	SBUS	0.01	3.2020e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004

tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.31	0.02
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.4900e-003
tblVehicleEF	SBUS	0.06	3.2450e-003
tblVehicleEF	SBUS	5.48	1.78
tblVehicleEF	SBUS	0.72	0.64
tblVehicleEF	SBUS	3.76	0.38
tblVehicleEF	SBUS	1,335.64	345.46
tblVehicleEF	SBUS	1,144.20	1,143.58
tblVehicleEF	SBUS	36.06	2.85
tblVehicleEF	SBUS	12.86	3.52
tblVehicleEF	SBUS	4.84	5.03
tblVehicleEF	SBUS	0.01	3.7780e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	3.6140e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003

tblVehicleEF	SBUS	0.67	0.19
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.23	0.02
tblVehicleEF	SBUS	0.01	3.2820e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.2700e-004	2.8000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003
tblVehicleEF	SBUS	0.96	0.27
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.25	0.02
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3930e-003
tblVehicleEF	SBUS	0.07	4.0100e-003
tblVehicleEF	SBUS	5.85	1.87
tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.54	0.56
tblVehicleEF	SBUS	1,181.05	325.23
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.14
tblVehicleEF	SBUS	11.91	3.35
tblVehicleEF	SBUS	5.09	5.28
tblVehicleEF	SBUS	0.02	5.4310e-003

tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.02	5.1960e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003
tblVehicleEF	SBUS	0.68	0.19
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.29	0.02
tblVehicleEF	SBUS	0.01	3.0910e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003
tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.32	0.03
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.79	32.64

tblVehicleEF	UBUS	14.93	1.46
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.41
tblVehicleEF	UBUS	6.43	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004
tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.19	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.6230e-003	1.7200e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004
tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.30	0.08
tblVehicleEF	UBUS	1.95	4.19

tblVehicleEF	UBUS	0.08	0.02
tblVehicleEF	UBUS	9.90	32.64
tblVehicleEF	UBUS	12.23	1.20
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	16.98
tblVehicleEF	UBUS	5.98	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	0.02	3.2040e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	0.67	0.06
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.06	0.06
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.5760e-003	1.6800e-004
tblVehicleEF	UBUS	0.02	3.2040e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	2.69	4.28
tblVehicleEF	UBUS	0.02	0.05

tblVehicleEF	UBUS	1.16	0.07
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.80	32.64
tblVehicleEF	UBUS	14.43	1.42
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.36
tblVehicleEF	UBUS	6.31	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004
tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.17	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.6140e-003	1.7200e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004

tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.28	0.08
tblVehicleTrips	CC_TTP	0.00	79.50
tblVehicleTrips	CNW_TTP	0.00	19.00
tblVehicleTrips	CW_TTP	0.00	1.50
tblVehicleTrips	DV_TP	51.00	0.00
tblVehicleTrips	DV_TP	26.00	0.00
tblVehicleTrips	DV_TP	58.00	0.00
tblVehicleTrips	DV_TP	27.00	0.00
tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	DV_TP	20.00	0.00
tblVehicleTrips	DV_TP	18.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	PB_TP	28.00	86.00
tblVehicleTrips	PB_TP	47.00	65.00
tblVehicleTrips	PB_TP	14.00	58.00
tblVehicleTrips	PB_TP	59.00	85.00
tblVehicleTrips	PB_TP	9.00	45.00
tblVehicleTrips	PB_TP	43.00	88.00
tblVehicleTrips	PB_TP	44.00	73.00
tblVehicleTrips	PB_TP	11.00	63.00
tblVehicleTrips	PB_TP	0.00	54.00
tblVehicleTrips	PR_TP	21.00	14.00
tblVehicleTrips	PR_TP	27.00	35.00
tblVehicleTrips	PR_TP	28.00	42.00
tblVehicleTrips	PR_TP	14.00	15.00

tblVehicleTrips	PR_TP	52.00	55.00
tblVehicleTrips	PR_TP	37.00	12.00
tblVehicleTrips	PR_TP	38.00	27.00
tblVehicleTrips	PR_TP	54.00	37.00
tblVehicleTrips	PR_TP	0.00	46.00
tblVehicleTrips	ST_TR	23.72	304.00
tblVehicleTrips	ST_TR	6.21	6.22
tblVehicleTrips	ST_TR	168.56	182.17
tblVehicleTrips	ST_TR	158.37	122.40
tblVehicleTrips	ST_TR	8.19	10.50
tblVehicleTrips	ST_TR	94.36	90.04
tblVehicleTrips	ST_TR	49.97	46.12
tblVehicleTrips	ST_TR	0.00	87.70
tblVehicleTrips	SU_TR	11.88	410.00
tblVehicleTrips	SU_TR	5.83	5.84
tblVehicleTrips	SU_TR	168.56	166.88
tblVehicleTrips	SU_TR	131.84	142.64
tblVehicleTrips	SU_TR	5.95	8.48
tblVehicleTrips	SU_TR	72.16	71.97
tblVehicleTrips	SU_TR	25.24	21.10
tblVehicleTrips	SU_TR	0.00	87.70
tblVehicleTrips	WD_TR	23.72	142.00
tblVehicleTrips	WD_TR	148.15	79.67
tblVehicleTrips	WD_TR	74.06	47.62
tblVehicleTrips	WD_TR	168.56	172.01
tblVehicleTrips	WD_TR	32.93	30.00
tblVehicleTrips	WD_TR	127.15	112.18

tblVehicleTrips	WD_TR	8.17	12.23
tblVehicleTrips	WD_TR	89.95	83.84
tblVehicleTrips	WD_TR	42.70	37.75
tblVehicleTrips	WD_TR	0.00	820.38
tblWater	IndoorWaterUseRate	338,691.99	3,136,416.99
tblWater	IndoorWaterUseRate	0.00	667,774.17
tblWater	OutdoorWaterUseRate	0.00	42,623.88

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Energy	0.3178	2.8889	2.4267	0.0173		0.2196	0.2196		0.2196	0.2196		3,466.7030	3,466.7030	0.0665	0.0636	3,487.3039
Mobile	39.8675	104.0039	203.9107	0.4658	35.8772	0.7341	36.6113	9.5892	0.6949	10.2841		48,227.3977	48,227.3977	3.5173		48,315.3289
Total	**45.5012**	**106.8943**	**206.4995**	**0.4832**	**35.8772**	**0.9543**	**36.8315**	**9.5892**	**0.9150**	**10.5042**		**51,694.4468**	**51,694.4468**	**3.5846**	**0.0636**	**51,803.0019**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Energy	0.3178	2.8889	2.4267	0.0173		0.2196	0.2196		0.2196	0.2196		3,466.7030	3,466.7030	0.0665	0.0636	3,487.3039
Mobile	39.8675	104.0039	203.9107	0.4658	35.8772	0.7341	36.6113	9.5892	0.6949	10.2841		48,227.3977	48,227.3977	3.5173		48,315.3289
Total	**45.5012**	**106.8943**	**206.4995**	**0.4832**	**35.8772**	**0.9543**	**36.8315**	**9.5892**	**0.9150**	**10.5042**		**51,694.4468**	**51,694.4468**	**3.5846**	**0.0636**	**51,803.0019**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/25/2020	6/25/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 17.56

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.2 Site Preparation - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	39.8675	104.0039	203.9107	0.4658	35.8772	0.7341	36.6113	9.5892	0.6949	10.2841		48,227.3977	48,227.3977	3.5173		48,315.3289
Unmitigated	39.8675	104.0039	203.9107	0.4658	35.8772	0.7341	36.6113	9.5892	0.6949	10.2841		48,227.3977	48,227.3977	3.5173		48,315.3289

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	511.20	1,094.40	1476.00	426,767	426,767
Bank (with Drive-Through)	478.02	517.92	191.40	498,767	498,767
Day-Care Center	475.72	62.14	58.34	518,758	518,758
Gasoline/Service Station	3,096.18	3,279.06	3003.84	1,501,619	1,501,619
Health Club	1,140.00	793.06	1015.74	2,057,883	2,057,883
High Turnover (Sit Down Restaurant)	654.01	713.59	831.59	286,809	286,809
Hotel	1,651.05	1,417.50	1144.80	3,687,504	3,687,504
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Quality Restaurant	1,106.69	1,188.53	950.00	1,009,217	1,009,217
Regional Shopping Center	1,925.25	2,352.12	1076.10	2,416,706	2,416,706
User Defined Recreational	1,804.84	192.94	192.94	1,880,704	1,880,704
Total	12,842.96	11,611.26	9,940.76	14,284,735	14,284,735

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	16.60	8.40	6.90	33.00	48.00	19.00	14	0	86
Bank (with Drive-Through)	16.60	8.40	6.90	6.60	74.40	19.00	35	0	65
Day-Care Center	16.60	8.40	6.90	12.70	82.30	5.00	42	0	58
Gasoline/Service Station	16.60	8.40	6.90	2.00	79.00	19.00	15	0	85
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	55	0	45
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	12	0	88
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	27	0	73
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	37	0	63
User Defined Recreational	16.60	8.40	6.90	1.50	79.50	19.00	46	0	54

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Bank (with Drive-Through)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Day-Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Gasoline/Service Station	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Health Club	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
High Turnover (Sit Down Restaurant)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Hotel	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Other Asphalt Surfaces	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Parking Lot	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Quality Restaurant	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Regional Shopping Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
User Defined Recreational	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Bedford Marketplace (Operations) - San Bernardino-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.3178	2.8889	2.4267	0.0173		0.2196	0.2196		0.2196	0.2196		3,466.7030	3,466.7030	0.0665	0.0636	3,487.3039
NaturalGas Unmitigated	0.3178	2.8889	2.4267	0.0173		0.2196	0.2196		0.2196	0.2196		3,466.7030	3,466.7030	0.0665	0.0636	3,487.3039

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	274.981	2.9700e-003	0.0270	0.0227	1.6000e-004		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003		32.3507	32.3507	6.2000e-004	5.9000e-004	32.5429
Bank (with Drive-Through)	458.301	4.9400e-003	0.0449	0.0377	2.7000e-004		3.4100e-003	3.4100e-003		3.4100e-003	3.4100e-003		53.9178	53.9178	1.0300e-003	9.9000e-004	54.2382
Day-Care Center	182.557	1.9700e-003	0.0179	0.0150	1.1000e-004		1.3600e-003	1.3600e-003		1.3600e-003	1.3600e-003		21.4773	21.4773	4.1000e-004	3.9000e-004	21.6049
Gasoline/Service Station	305.534	3.2900e-003	0.0300	0.0252	1.8000e-004		2.2800e-003	2.2800e-003		2.2800e-003	2.2800e-003		35.9452	35.9452	6.9000e-004	6.6000e-004	36.1588
Health Club	2902.58	0.0313	0.2846	0.2390	1.7100e-003		0.0216	0.0216		0.0216	0.0216		341.4795	341.4795	6.5500e-003	6.2600e-003	343.5087
High Turnover (Sit Down Restaurant)	3992.65	0.0431	0.3914	0.3288	2.3500e-003		0.0298	0.0298		0.0298	0.0298		469.7230	469.7230	9.0000e-003	8.6100e-003	472.5143
Hotel	10567.4	0.1140	1.0360	0.8703	6.2200e-003		0.0787	0.0787		0.0787	0.0787		1,243.2210	1,243.2210	0.0238	0.0228	1,250.6088
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	9046.16	0.0976	0.8869	0.7450	5.3200e-003		0.0674	0.0674		0.0674	0.0674		1,064.2540	1,064.2540	0.0204	0.0195	1,070.5783
Regional Shopping Center	229.151	2.4700e-003	0.0225	0.0189	1.3000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003		26.9589	26.9589	5.2000e-004	4.9000e-004	27.1191
User Defined Recreational	1507.69	0.0163	0.1478	0.1242	8.9000e-004		0.0112	0.0112		0.0112	0.0112		177.3757	177.3757	3.4000e-003	3.2500e-003	178.4297
Total		**0.3178**	**2.8889**	**2.4267**	**0.0173**		**0.2196**	**0.2196**		**0.2196**	**0.2196**		**3,466.7030**	**3,466.7030**	**0.0665**	**0.0635**	**3,487.3039**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	0.274981	2.9700e-003	0.0270	0.0227	1.6000e-004		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003		32.3507	32.3507	6.2000e-004	5.9000e-004	32.5429
Bank (with Drive-Through)	0.458301	4.9400e-003	0.0449	0.0377	2.7000e-004		3.4100e-003	3.4100e-003		3.4100e-003	3.4100e-003		53.9178	53.9178	1.0300e-003	9.9000e-004	54.2382
Day-Care Center	0.182557	1.9700e-003	0.0179	0.0150	1.1000e-004		1.3600e-003	1.3600e-003		1.3600e-003	1.3600e-003		21.4773	21.4773	4.1000e-004	3.9000e-004	21.6049
Gasoline/Service Station	0.305534	3.2900e-003	0.0300	0.0252	1.8000e-004		2.2800e-003	2.2800e-003		2.2800e-003	2.2800e-003		35.9452	35.9452	6.9000e-004	6.6000e-004	36.1588
Health Club	2.90258	0.0313	0.2846	0.2390	1.7100e-003		0.0216	0.0216		0.0216	0.0216		341.4795	341.4795	6.5500e-003	6.2600e-003	343.5087
High Turnover (Sit Down Restaurant)	3.99265	0.0431	0.3914	0.3288	2.3500e-003		0.0298	0.0298		0.0298	0.0298		469.7230	469.7230	9.0000e-003	8.6100e-003	472.5143
Hotel	10.5674	0.1140	1.0360	0.8703	6.2200e-003		0.0787	0.0787		0.0787	0.0787		1,243.2210	1,243.2210	0.0238	0.0228	1,250.6088
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	9.04616	0.0976	0.8869	0.7450	5.3200e-003		0.0674	0.0674		0.0674	0.0674		1,064.2540	1,064.2540	0.0204	0.0195	1,070.5783
Regional Shopping Center	0.229151	2.4700e-003	0.0225	0.0189	1.3000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003		26.9589	26.9589	5.2000e-004	4.9000e-004	27.1191
User Defined Recreational	1.50769	0.0163	0.1478	0.1242	8.9000e-004		0.0112	0.0112		0.0112	0.0112		177.3757	177.3757	3.4000e-003	3.2500e-003	178.4297
Total		**0.3178**	**2.8889**	**2.4267**	**0.0173**		**0.2196**	**0.2196**		**0.2196**	**0.2196**		**3,466.7030**	**3,466.7030**	**0.0665**	**0.0635**	**3,487.3039**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Unmitigated	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.6235					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.6773					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0151	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Total	**5.3159**	**1.4900e-003**	**0.1621**	**1.0000e-005**		**5.8000e-004**	**5.8000e-004**		**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**		**0.3691**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.6235					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.6773					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0151	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Total	**5.3159**	**1.4900e-003**	**0.1621**	**1.0000e-005**		**5.8000e-004**	**5.8000e-004**		**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**		**0.3691**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Bedford Marketplace (Operations)

San Bernardino-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Bank (with Drive-Through)	6.00	1000sqft	0.14	6,000.00	0
Day-Care Center	9.99	1000sqft	0.23	9,990.00	0
Other Asphalt Surfaces	408.85	1000sqft	9.39	408,852.00	0
Parking Lot	890.00	Space	8.17	356,000.00	0
Health Club	38.00	1000sqft	0.87	38,000.00	0
High Turnover (Sit Down Restaurant)	5.83	1000sqft	0.13	5,826.00	0
Hotel	135.00	Room	0.57	88,730.00	0
Quality Restaurant	13.20	1000sqft	0.30	13,200.00	0
User Defined Recreational	2.20	User Defined Unit	0.05	2,200.00	0
Automobile Care Center	3.60	1000sqft	0.08	3,600.00	0
Gasoline/Service Station	18.00	Pump	0.09	4,000.00	0
Regional Shopping Center	51.00	1000sqft	1.17	51,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Net Land Area per the Site Plan is +/-21.2 acres.

Construction Phase - Operations Run Only.

Off-road Equipment - Hours are based on an 8-hour workday.

Off-road Equipment - Operations Run Only.

Trips and VMT - Operations Run Only.

Grading -

Architectural Coating - Rule 1113

Vehicle Trips - Trip Rates based on information provided in the TIA.

Energy Use - Energy rates for User Defined Recreational (Coffee/Shop use) reflect the CalEEMod default rates for Fast-Food Restaurant with Drive Thru.

Water And Wastewater - Water rates adjusted to assume that half of the trips to the car wash will use approximately 30 gallons of water

Solid Waste -

Construction Off-road Equipment Mitigation -

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	3.03	2.12
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	6.62	4.63
tblEnergyUse	LightingElect	5.44	3.81

tblEnergyUse	LightingElect	6.62	4.63
tblEnergyUse	LightingElect	5.61	3.93
tblEnergyUse	LightingElect	0.00	4.63
tblEnergyUse	NT24E	0.00	28.48
tblEnergyUse	NT24NG	0.00	195.77
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	2.78	1.95
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	12.38	8.67
tblEnergyUse	T24E	6.47	4.53
tblEnergyUse	T24E	12.38	8.67
tblEnergyUse	T24E	4.58	3.21
tblEnergyUse	T24E	0.00	8.67
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	6.97	4.88
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	77.67	54.37
tblEnergyUse	T24NG	55.15	38.61
tblEnergyUse	T24NG	77.67	54.37
tblEnergyUse	T24NG	1.92	1.34
tblEnergyUse	T24NG	0.00	54.37
tblLandUse	LandUseSquareFeet	408,850.00	408,852.00
tblLandUse	LandUseSquareFeet	5,830.00	5,826.00

tblLandUse	LandUseSquareFeet	196,020.00	88,730.00
tblLandUse	LandUseSquareFeet	0.00	2,200.00
tblLandUse	LandUseSquareFeet	2,541.15	4,000.00
tblLandUse	LotAcreage	8.01	8.17
tblLandUse	LotAcreage	4.50	0.57
tblLandUse	LotAcreage	0.00	0.05
tblLandUse	LotAcreage	0.06	0.09
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblVehicleEF	HHD	1.24	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	3.46	7.82
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.92	2.4420e-003
tblVehicleEF	HHD	6,983.95	1,459.93
tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.07	7.65
tblVehicleEF	HHD	2.87	3.24
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03

tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004
tblVehicleEF	HHD	0.89	0.60
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	2.4200e-004	6.3700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004
tblVehicleEF	HHD	1.02	0.68
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4200e-004	6.3700e-004
tblVehicleEF	HHD	0.07	1.0000e-006
tblVehicleEF	HHD	1.17	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	2.52	7.65
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.80	2.2950e-003
tblVehicleEF	HHD	7,395.94	1,453.32

tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.97	7.40
tblVehicleEF	HHD	2.70	3.05
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	1.8400e-004	9.0000e-006
tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.84	0.62
tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.7000e-005	0.00
tblVehicleEF	HHD	1.8400e-004	9.0000e-006
tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.97	0.71

tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	1.34	0.03
tblVehicleEF	HHD	0.04	3.7740e-003
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	4.76	7.98
tblVehicleEF	HHD	0.58	0.36
tblVehicleEF	HHD	1.89	2.4140e-003
tblVehicleEF	HHD	6,415.00	1,454.79
tblVehicleEF	HHD	1,493.95	1,371.01
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	26.84	7.90
tblVehicleEF	HHD	2.83	3.15
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.8160e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004

tblVehicleEF	HHD	0.96	0.56
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.08
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.06	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004
tblVehicleEF	HHD	1.10	0.64
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.09
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.07	1.0000e-006
tblVehicleEF	LDA	4.6640e-003	2.7950e-003
tblVehicleEF	LDA	6.4640e-003	0.06
tblVehicleEF	LDA	0.62	0.70
tblVehicleEF	LDA	1.32	2.22
tblVehicleEF	LDA	261.85	269.33
tblVehicleEF	LDA	59.28	55.48
tblVehicleEF	LDA	0.06	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07

tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.6230e-003	2.6640e-003
tblVehicleEF	LDA	6.1500e-004	5.4900e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.10	0.27
tblVehicleEF	LDA	5.3170e-003	3.2030e-003
tblVehicleEF	LDA	5.3900e-003	0.05
tblVehicleEF	LDA	0.76	0.86
tblVehicleEF	LDA	1.10	1.85
tblVehicleEF	LDA	286.52	294.16
tblVehicleEF	LDA	59.28	54.75
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11

tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.07	0.21
tblVehicleEF	LDA	2.8710e-003	2.9100e-003
tblVehicleEF	LDA	6.1100e-004	5.4200e-004
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.08	0.23
tblVehicleEF	LDA	4.5320e-003	2.7260e-003
tblVehicleEF	LDA	6.4200e-003	0.06
tblVehicleEF	LDA	0.58	0.67
tblVehicleEF	LDA	1.30	2.19
tblVehicleEF	LDA	256.02	263.51
tblVehicleEF	LDA	59.28	55.41
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.25

tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.5640e-003	2.6070e-003
tblVehicleEF	LDA	6.1500e-004	5.4800e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.25
tblVehicleEF	LDA	0.09	0.27
tblVehicleEF	LDT1	0.02	8.1890e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.71	1.63
tblVehicleEF	LDT1	4.02	2.54
tblVehicleEF	LDT1	323.73	319.09
tblVehicleEF	LDT1	72.77	67.44
tblVehicleEF	LDT1	0.18	0.15
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.29	0.48
tblVehicleEF	LDT1	3.2600e-003	3.1580e-003

tblVehicleEF	LDT1	7.9900e-004	6.6700e-004
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.06	0.05
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT1	0.02	9.2860e-003
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	2.05	1.97
tblVehicleEF	LDT1	3.30	2.10
tblVehicleEF	LDT1	352.65	345.09
tblVehicleEF	LDT1	72.77	66.47
tblVehicleEF	LDT1	0.16	0.13
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.40	0.44
tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.24	0.41
tblVehicleEF	LDT1	3.5540e-003	3.4150e-003
tblVehicleEF	LDT1	7.8600e-004	6.5800e-004
tblVehicleEF	LDT1	0.40	0.44

tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.06	0.06
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.26	0.44
tblVehicleEF	LDT1	0.01	7.9980e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.62	1.55
tblVehicleEF	LDT1	3.95	2.49
tblVehicleEF	LDT1	316.91	312.93
tblVehicleEF	LDT1	72.77	67.36
tblVehicleEF	LDT1	0.17	0.14
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.28	0.48
tblVehicleEF	LDT1	3.1900e-003	3.0970e-003
tblVehicleEF	LDT1	7.9800e-004	6.6700e-004
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13

tblVehicleEF	LDT1	0.05	0.05
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT2	6.9330e-003	4.8260e-003
tblVehicleEF	LDT2	9.2890e-003	0.08
tblVehicleEF	LDT2	0.85	1.06
tblVehicleEF	LDT2	1.85	2.89
tblVehicleEF	LDT2	363.70	344.02
tblVehicleEF	LDT2	81.97	72.94
tblVehicleEF	LDT2	0.10	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.13	0.38
tblVehicleEF	LDT2	3.6440e-003	3.4040e-003
tblVehicleEF	LDT2	8.5100e-004	7.2200e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50

tblVehicleEF	LDT2	0.14	0.42
tblVehicleEF	LDT2	7.8730e-003	5.5090e-003
tblVehicleEF	LDT2	7.7350e-003	0.07
tblVehicleEF	LDT2	1.04	1.30
tblVehicleEF	LDT2	1.53	2.39
tblVehicleEF	LDT2	397.09	369.57
tblVehicleEF	LDT2	81.97	71.94
tblVehicleEF	LDT2	0.09	0.09
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	3.9810e-003	3.6570e-003
tblVehicleEF	LDT2	8.4600e-004	7.1200e-004
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.11	0.35
tblVehicleEF	LDT2	6.7430e-003	4.7100e-003

tblVehicleEF	LDT2	9.2200e-003	0.08
tblVehicleEF	LDT2	0.81	1.01
tblVehicleEF	LDT2	1.82	2.84
tblVehicleEF	LDT2	355.82	337.97
tblVehicleEF	LDT2	81.97	72.85
tblVehicleEF	LDT2	0.09	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.58
tblVehicleEF	LDT2	0.12	0.38
tblVehicleEF	LDT2	3.5650e-003	3.3440e-003
tblVehicleEF	LDT2	8.5100e-004	7.2100e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.08	0.58
tblVehicleEF	LDT2	0.14	0.41
tblVehicleEF	LHD1	5.4860e-003	4.9840e-003
tblVehicleEF	LHD1	0.01	7.1410e-003
tblVehicleEF	LHD1	0.02	0.02

tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.77	1.07
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.99
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.26	1.69
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.29	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6200e-004	1.0900e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003

tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD1	5.4860e-003	5.0000e-003
tblVehicleEF	LHD1	0.01	7.3180e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.18	0.99
tblVehicleEF	LHD1	2.58	1.00
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.98
tblVehicleEF	LHD1	30.92	10.87
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.12	1.58
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11

tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.27	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0370e-003	6.3960e-003
tblVehicleEF	LHD1	3.5800e-004	1.0800e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.30	0.09
tblVehicleEF	LHD1	5.4860e-003	4.9870e-003
tblVehicleEF	LHD1	0.01	7.1590e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.72	1.05
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.96
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.22	1.66
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004

tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6100e-004	1.0800e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD2	3.8190e-003	3.4060e-003
tblVehicleEF	LHD2	5.2410e-003	4.5240e-003
tblVehicleEF	LHD2	9.1660e-003	0.01

tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.29	0.64
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.51
tblVehicleEF	LHD2	24.89	7.96
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.69	1.81
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7300e-004	7.9000e-005
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05

tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.14	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4160e-003
tblVehicleEF	LHD2	5.3190e-003	4.5750e-003
tblVehicleEF	LHD2	8.7380e-003	9.6870e-003
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.56	0.62
tblVehicleEF	LHD2	1.21	0.60
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.89
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.59	1.70
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02

tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7100e-004	7.8000e-005
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4070e-003
tblVehicleEF	LHD2	5.2490e-003	4.5300e-003
tblVehicleEF	LHD2	9.0820e-003	0.01
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.27	0.63
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.94
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.67	1.78
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01

tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7200e-004	7.9000e-005
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.16	0.25
tblVehicleEF	MCY	21.02	21.16
tblVehicleEF	MCY	9.91	8.77
tblVehicleEF	MCY	167.12	211.16
tblVehicleEF	MCY	46.87	61.87

tblVehicleEF	MCY	1.17	1.17
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84
tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.26	2.26
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.17	1.92
tblVehicleEF	MCY	2.0790e-003	2.0900e-003
tblVehicleEF	MCY	6.9500e-004	6.1200e-004
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84
tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.76	2.76
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.37	2.08
tblVehicleEF	MCY	0.41	0.32
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	21.14	21.29
tblVehicleEF	MCY	9.06	7.97
tblVehicleEF	MCY	167.12	211.14
tblVehicleEF	MCY	46.87	59.68
tblVehicleEF	MCY	0.99	0.99
tblVehicleEF	MCY	1.8190e-003	1.7890e-003

tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.19	2.19
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	1.87	1.64
tblVehicleEF	MCY	2.0790e-003	2.0890e-003
tblVehicleEF	MCY	6.7100e-004	5.9100e-004
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.69	2.68
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.03	1.78
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	20.06	20.18
tblVehicleEF	MCY	9.53	8.41
tblVehicleEF	MCY	167.12	209.47
tblVehicleEF	MCY	46.87	61.06
tblVehicleEF	MCY	1.13	1.13
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003

tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.22	2.22
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.10	1.84
tblVehicleEF	MCY	2.0630e-003	2.0730e-003
tblVehicleEF	MCY	6.8600e-004	6.0400e-004
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.71	2.71
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.28	2.00
tblVehicleEF	MDV	0.01	6.6050e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.55	1.33
tblVehicleEF	MDV	3.59	3.53
tblVehicleEF	MDV	498.66	425.70
tblVehicleEF	MDV	110.76	90.07
tblVehicleEF	MDV	0.20	0.14
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12

tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.28	0.50
tblVehicleEF	MDV	5.0000e-003	4.2090e-003
tblVehicleEF	MDV	1.1710e-003	8.9100e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MDV	0.02	7.4780e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.87	1.60
tblVehicleEF	MDV	2.99	2.92
tblVehicleEF	MDV	542.90	452.84
tblVehicleEF	MDV	110.76	88.84
tblVehicleEF	MDV	0.18	0.12
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22

tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.24	0.42
tblVehicleEF	MDV	5.4470e-003	4.4780e-003
tblVehicleEF	MDV	1.1600e-003	8.7900e-004
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22
tblVehicleEF	MDV	0.06	0.05
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.26	0.46
tblVehicleEF	MDV	0.01	6.4310e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.47	1.25
tblVehicleEF	MDV	3.53	3.47
tblVehicleEF	MDV	488.33	419.25
tblVehicleEF	MDV	110.76	89.97
tblVehicleEF	MDV	0.19	0.13
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.13	0.61

tblVehicleEF	MDV	0.28	0.49
tblVehicleEF	MDV	4.8960e-003	4.1450e-003
tblVehicleEF	MDV	1.1700e-003	8.9000e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.13	0.61
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.60	0.37
tblVehicleEF	MH	6.96	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.64	4.70
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00

tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.2000e-004	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.44	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.74	0.37
tblVehicleEF	MH	6.31	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.50	4.42
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00

tblVehicleEF	MH	0.37	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.0900e-004	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.41	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.61	0.37
tblVehicleEF	MH	6.87	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.61	4.62
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00

tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.1900e-004	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.43	0.00
tblVehicleEF	MHD	0.02	3.2250e-003
tblVehicleEF	MHD	4.1450e-003	6.0340e-003
tblVehicleEF	MHD	0.06	8.8310e-003
tblVehicleEF	MHD	0.33	0.34
tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	6.00	1.03
tblVehicleEF	MHD	155.10	71.06
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.43
tblVehicleEF	MHD	0.63	0.61
tblVehicleEF	MHD	1.08	2.22
tblVehicleEF	MHD	4.3700e-004	2.0190e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	4.1800e-004	1.9320e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004

tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.11
tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.4910e-003	6.7400e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4400e-004	8.3000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.11
tblVehicleEF	MHD	0.40	0.05
tblVehicleEF	MHD	0.02	3.0610e-003
tblVehicleEF	MHD	4.2290e-003	6.0860e-003
tblVehicleEF	MHD	0.05	8.4200e-003
tblVehicleEF	MHD	0.24	0.28
tblVehicleEF	MHD	0.32	0.56
tblVehicleEF	MHD	5.61	0.96
tblVehicleEF	MHD	164.29	72.29
tblVehicleEF	MHD	1,105.72	1,029.54
tblVehicleEF	MHD	53.92	8.32
tblVehicleEF	MHD	0.65	0.62
tblVehicleEF	MHD	1.01	2.09

tblVehicleEF	MHD	3.6900e-004	1.7050e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	3.5300e-004	1.6310e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.35	0.04
tblVehicleEF	MHD	1.5770e-003	6.8600e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.3800e-004	8.2000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.38	0.05
tblVehicleEF	MHD	0.02	3.4660e-003
tblVehicleEF	MHD	4.1530e-003	6.0380e-003
tblVehicleEF	MHD	0.06	8.7320e-003
tblVehicleEF	MHD	0.46	0.42

tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	5.90	1.02
tblVehicleEF	MHD	142.41	69.34
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.40
tblVehicleEF	MHD	0.60	0.60
tblVehicleEF	MHD	1.06	2.18
tblVehicleEF	MHD	5.3200e-004	2.4540e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	5.0900e-004	2.3480e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	7.0500e-004	3.2200e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.13
tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.3710e-003	6.5800e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4300e-004	8.3000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	7.0500e-004	3.2200e-004

tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.13
tblVehicleEF	MHD	0.39	0.05
tblVehicleEF	OBUS	0.01	9.3650e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.27	0.49
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.67	2.81
tblVehicleEF	OBUS	70.21	68.33
tblVehicleEF	OBUS	1,126.32	1,507.23
tblVehicleEF	OBUS	71.08	22.19
tblVehicleEF	OBUS	0.32	0.39
tblVehicleEF	OBUS	1.10	1.47
tblVehicleEF	OBUS	1.1300e-004	1.5090e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.0800e-004	1.4440e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.41	0.13

tblVehicleEF	OBUS	6.8200e-004	6.5300e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2800e-004	2.2000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	OBUS	0.01	9.3930e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.26	0.47
tblVehicleEF	OBUS	0.75	1.22
tblVehicleEF	OBUS	6.11	2.57
tblVehicleEF	OBUS	73.34	68.71
tblVehicleEF	OBUS	1,126.32	1,507.28
tblVehicleEF	OBUS	71.08	21.80
tblVehicleEF	OBUS	0.33	0.39
tblVehicleEF	OBUS	1.02	1.35
tblVehicleEF	OBUS	9.5000e-005	1.2750e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	9.1000e-005	1.2200e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004

tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.05	0.09
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.39	0.13
tblVehicleEF	OBUS	7.1200e-004	6.5600e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.1800e-004	2.1600e-004
tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.07	0.11
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.42	0.14
tblVehicleEF	OBUS	0.01	9.3640e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.28	0.51
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.62	2.79
tblVehicleEF	OBUS	65.88	67.80
tblVehicleEF	OBUS	1,126.32	1,507.24
tblVehicleEF	OBUS	71.08	22.15
tblVehicleEF	OBUS	0.31	0.39

tblVehicleEF	OBUS	1.08	1.44
tblVehicleEF	OBUS	1.3700e-004	1.8320e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.3100e-004	1.7520e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.41	0.13
tblVehicleEF	OBUS	6.4100e-004	6.4800e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2700e-004	2.1900e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3980e-003
tblVehicleEF	SBUS	0.07	3.9120e-003

tblVehicleEF	SBUS	5.64	1.82
tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.49	0.54
tblVehicleEF	SBUS	1,270.71	336.96
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.11
tblVehicleEF	SBUS	12.46	3.45
tblVehicleEF	SBUS	5.17	5.36
tblVehicleEF	SBUS	0.01	4.4720e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	4.2790e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004
tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.68	0.19
tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.28	0.02
tblVehicleEF	SBUS	0.01	3.2020e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004

tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.31	0.02
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.4900e-003
tblVehicleEF	SBUS	0.06	3.2450e-003
tblVehicleEF	SBUS	5.48	1.78
tblVehicleEF	SBUS	0.72	0.64
tblVehicleEF	SBUS	3.76	0.38
tblVehicleEF	SBUS	1,335.64	345.46
tblVehicleEF	SBUS	1,144.20	1,143.58
tblVehicleEF	SBUS	36.06	2.85
tblVehicleEF	SBUS	12.86	3.52
tblVehicleEF	SBUS	4.84	5.03
tblVehicleEF	SBUS	0.01	3.7780e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	3.6140e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003

tblVehicleEF	SBUS	0.67	0.19
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.23	0.02
tblVehicleEF	SBUS	0.01	3.2820e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.2700e-004	2.8000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003
tblVehicleEF	SBUS	0.96	0.27
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.25	0.02
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3930e-003
tblVehicleEF	SBUS	0.07	4.0100e-003
tblVehicleEF	SBUS	5.85	1.87
tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.54	0.56
tblVehicleEF	SBUS	1,181.05	325.23
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.14
tblVehicleEF	SBUS	11.91	3.35
tblVehicleEF	SBUS	5.09	5.28
tblVehicleEF	SBUS	0.02	5.4310e-003

tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.02	5.1960e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003
tblVehicleEF	SBUS	0.68	0.19
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.29	0.02
tblVehicleEF	SBUS	0.01	3.0910e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003
tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.32	0.03
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.79	32.64

tblVehicleEF	UBUS	14.93	1.46
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.41
tblVehicleEF	UBUS	6.43	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004
tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.19	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.6230e-003	1.7200e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004
tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.30	0.08
tblVehicleEF	UBUS	1.95	4.19

tblVehicleEF	UBUS	0.08	0.02
tblVehicleEF	UBUS	9.90	32.64
tblVehicleEF	UBUS	12.23	1.20
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	16.98
tblVehicleEF	UBUS	5.98	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	0.02	3.2040e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	0.67	0.06
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.06	0.06
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.5760e-003	1.6800e-004
tblVehicleEF	UBUS	0.02	3.2040e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	2.69	4.28
tblVehicleEF	UBUS	0.02	0.05

tblVehicleEF	UBUS	1.16	0.07
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.80	32.64
tblVehicleEF	UBUS	14.43	1.42
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.36
tblVehicleEF	UBUS	6.31	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004
tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.17	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.6140e-003	1.7200e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004

tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.28	0.08
tblVehicleTrips	CC_TTP	0.00	79.50
tblVehicleTrips	CNW_TTP	0.00	19.00
tblVehicleTrips	CW_TTP	0.00	1.50
tblVehicleTrips	DV_TP	51.00	0.00
tblVehicleTrips	DV_TP	26.00	0.00
tblVehicleTrips	DV_TP	58.00	0.00
tblVehicleTrips	DV_TP	27.00	0.00
tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	DV_TP	20.00	0.00
tblVehicleTrips	DV_TP	18.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	PB_TP	28.00	86.00
tblVehicleTrips	PB_TP	47.00	65.00
tblVehicleTrips	PB_TP	14.00	58.00
tblVehicleTrips	PB_TP	59.00	85.00
tblVehicleTrips	PB_TP	9.00	45.00
tblVehicleTrips	PB_TP	43.00	88.00
tblVehicleTrips	PB_TP	44.00	73.00
tblVehicleTrips	PB_TP	11.00	63.00
tblVehicleTrips	PB_TP	0.00	54.00
tblVehicleTrips	PR_TP	21.00	14.00
tblVehicleTrips	PR_TP	27.00	35.00
tblVehicleTrips	PR_TP	28.00	42.00
tblVehicleTrips	PR_TP	14.00	15.00

tblVehicleTrips	PR_TP	52.00	55.00
tblVehicleTrips	PR_TP	37.00	12.00
tblVehicleTrips	PR_TP	38.00	27.00
tblVehicleTrips	PR_TP	54.00	37.00
tblVehicleTrips	PR_TP	0.00	46.00
tblVehicleTrips	ST_TR	23.72	304.00
tblVehicleTrips	ST_TR	6.21	6.22
tblVehicleTrips	ST_TR	168.56	182.17
tblVehicleTrips	ST_TR	158.37	122.40
tblVehicleTrips	ST_TR	8.19	10.50
tblVehicleTrips	ST_TR	94.36	90.04
tblVehicleTrips	ST_TR	49.97	46.12
tblVehicleTrips	ST_TR	0.00	87.70
tblVehicleTrips	SU_TR	11.88	410.00
tblVehicleTrips	SU_TR	5.83	5.84
tblVehicleTrips	SU_TR	168.56	166.88
tblVehicleTrips	SU_TR	131.84	142.64
tblVehicleTrips	SU_TR	5.95	8.48
tblVehicleTrips	SU_TR	72.16	71.97
tblVehicleTrips	SU_TR	25.24	21.10
tblVehicleTrips	SU_TR	0.00	87.70
tblVehicleTrips	WD_TR	23.72	142.00
tblVehicleTrips	WD_TR	148.15	79.67
tblVehicleTrips	WD_TR	74.06	47.62
tblVehicleTrips	WD_TR	168.56	172.01
tblVehicleTrips	WD_TR	32.93	30.00
tblVehicleTrips	WD_TR	127.15	112.18

tblVehicleTrips	WD_TR	8.17	12.23
tblVehicleTrips	WD_TR	89.95	83.84
tblVehicleTrips	WD_TR	42.70	37.75
tblVehicleTrips	WD_TR	0.00	820.38
tblWater	IndoorWaterUseRate	338,691.99	3,136,416.99
tblWater	IndoorWaterUseRate	0.00	667,774.17
tblWater	OutdoorWaterUseRate	0.00	42,623.88

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Energy	0.3178	2.8889	2.4267	0.0173		0.2196	0.2196		0.2196	0.2196		3,466.7030	3,466.7030	0.0665	0.0636	3,487.3039
Mobile	36.6107	106.7136	192.2829	0.4383	35.8702	0.7365	36.6067	9.5867	0.6972	10.2838		45,161.1201	45,161.1201	3.3551		45,244.9982
Total	**42.2445**	**109.6040**	**194.8717**	**0.4556**	**35.8702**	**0.9566**	**36.8268**	**9.5867**	**0.9173**	**10.5040**		**48,628.1693**	**48,628.1693**	**3.4225**	**0.0636**	**48,732.6712**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Energy	0.3178	2.8889	2.4267	0.0173		0.2196	0.2196		0.2196	0.2196		3,466.7030	3,466.7030	0.0665	0.0636	3,487.3039
Mobile	36.6107	106.7136	192.2829	0.4383	35.8702	0.7365	36.6067	9.5867	0.6972	10.2838		45,161.1201	45,161.1201	3.3551		45,244.9982
Total	**42.2445**	**109.6040**	**194.8717**	**0.4556**	**35.8702**	**0.9566**	**36.8268**	**9.5867**	**0.9173**	**10.5040**		**48,628.1693**	**48,628.1693**	**3.4225**	**0.0636**	**48,732.6712**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/25/2020	6/25/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 17.56

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.2 Site Preparation - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	36.6107	106.7136	192.2829	0.4383	35.8702	0.7365	36.6067	9.5867	0.6972	10.2838		45,161.1201	45,161.1201	3.3551		45,244.9982
Unmitigated	36.6107	106.7136	192.2829	0.4383	35.8702	0.7365	36.6067	9.5867	0.6972	10.2838		45,161.1201	45,161.1201	3.3551		45,244.9982

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	511.20	1,094.40	1476.00	426,767	426,767
Bank (with Drive-Through)	478.02	517.92	191.40	498,767	498,767
Day-Care Center	475.72	62.14	58.34	518,758	518,758
Gasoline/Service Station	3,096.18	3,279.06	3003.84	1,501,619	1,501,619
Health Club	1,140.00	793.06	1015.74	2,057,883	2,057,883
High Turnover (Sit Down Restaurant)	654.01	713.59	831.59	286,809	286,809
Hotel	1,651.05	1,417.50	1144.80	3,687,504	3,687,504
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Quality Restaurant	1,106.69	1,188.53	950.00	1,009,217	1,009,217
Regional Shopping Center	1,925.25	2,352.12	1076.10	2,416,706	2,416,706
User Defined Recreational	1,804.84	192.94	192.94	1,880,704	1,880,704
Total	12,842.96	11,611.26	9,940.76	14,284,735	14,284,735

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	16.60	8.40	6.90	33.00	48.00	19.00	14	0	86
Bank (with Drive-Through)	16.60	8.40	6.90	6.60	74.40	19.00	35	0	65
Day-Care Center	16.60	8.40	6.90	12.70	82.30	5.00	42	0	58
Gasoline/Service Station	16.60	8.40	6.90	2.00	79.00	19.00	15	0	85
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	55	0	45
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	12	0	88
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	27	0	73
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	37	0	63
User Defined Recreational	16.60	8.40	6.90	1.50	79.50	19.00	46	0	54

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Bank (with Drive-Through)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Day-Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Gasoline/Service Station	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Health Club	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
High Turnover (Sit Down Restaurant)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Hotel	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Other Asphalt Surfaces	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Parking Lot	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Quality Restaurant	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Regional Shopping Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
User Defined Recreational	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Bedford Marketplace (Operations) - San Bernardino-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.3178	2.8889	2.4267	0.0173		0.2196	0.2196		0.2196	0.2196		3,466.7030	3,466.7030	0.0665	0.0636	3,487.3039
NaturalGas Unmitigated	0.3178	2.8889	2.4267	0.0173		0.2196	0.2196		0.2196	0.2196		3,466.7030	3,466.7030	0.0665	0.0636	3,487.3039

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	274.981	2.9700e-003	0.0270	0.0227	1.6000e-004		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003		32.3507	32.3507	6.2000e-004	5.9000e-004	32.5429
Bank (with Drive-Through)	458.301	4.9400e-003	0.0449	0.0377	2.7000e-004		3.4100e-003	3.4100e-003		3.4100e-003	3.4100e-003		53.9178	53.9178	1.0300e-003	9.9000e-004	54.2382
Day-Care Center	182.557	1.9700e-003	0.0179	0.0150	1.1000e-004		1.3600e-003	1.3600e-003		1.3600e-003	1.3600e-003		21.4773	21.4773	4.1000e-004	3.9000e-004	21.6049
Gasoline/Service Station	305.534	3.2900e-003	0.0300	0.0252	1.8000e-004		2.2800e-003	2.2800e-003		2.2800e-003	2.2800e-003		35.9452	35.9452	6.9000e-004	6.6000e-004	36.1588
Health Club	2902.58	0.0313	0.2846	0.2390	1.7100e-003		0.0216	0.0216		0.0216	0.0216		341.4795	341.4795	6.5500e-003	6.2600e-003	343.5087
High Turnover (Sit Down Restaurant)	3992.65	0.0431	0.3914	0.3288	2.3500e-003		0.0298	0.0298		0.0298	0.0298		469.7230	469.7230	9.0000e-003	8.6100e-003	472.5143
Hotel	10567.4	0.1140	1.0360	0.8703	6.2200e-003		0.0787	0.0787		0.0787	0.0787		1,243.2210	1,243.2210	0.0238	0.0228	1,250.6088
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	9046.16	0.0976	0.8869	0.7450	5.3200e-003		0.0674	0.0674		0.0674	0.0674		1,064.2540	1,064.2540	0.0204	0.0195	1,070.5783
Regional Shopping Center	229.151	2.4700e-003	0.0225	0.0189	1.3000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003		26.9589	26.9589	5.2000e-004	4.9000e-004	27.1191
User Defined Recreational	1507.69	0.0163	0.1478	0.1242	8.9000e-004		0.0112	0.0112		0.0112	0.0112		177.3757	177.3757	3.4000e-003	3.2500e-003	178.4297
Total		**0.3178**	**2.8889**	**2.4267**	**0.0173**		**0.2196**	**0.2196**		**0.2196**	**0.2196**		**3,466.7030**	**3,466.7030**	**0.0665**	**0.0635**	**3,487.3039**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	0.274981	2.9700e-003	0.0270	0.0227	1.6000e-004		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003		32.3507	32.3507	6.2000e-004	5.9000e-004	32.5429
Bank (with Drive-Through)	0.458301	4.9400e-003	0.0449	0.0377	2.7000e-004		3.4100e-003	3.4100e-003		3.4100e-003	3.4100e-003		53.9178	53.9178	1.0300e-003	9.9000e-004	54.2382
Day-Care Center	0.182557	1.9700e-003	0.0179	0.0150	1.1000e-004		1.3600e-003	1.3600e-003		1.3600e-003	1.3600e-003		21.4773	21.4773	4.1000e-004	3.9000e-004	21.6049
Gasoline/Service Station	0.305534	3.2900e-003	0.0300	0.0252	1.8000e-004		2.2800e-003	2.2800e-003		2.2800e-003	2.2800e-003		35.9452	35.9452	6.9000e-004	6.6000e-004	36.1588
Health Club	2.90258	0.0313	0.2846	0.2390	1.7100e-003		0.0216	0.0216		0.0216	0.0216		341.4795	341.4795	6.5500e-003	6.2600e-003	343.5087
High Turnover (Sit Down Restaurant)	3.99265	0.0431	0.3914	0.3288	2.3500e-003		0.0298	0.0298		0.0298	0.0298		469.7230	469.7230	9.0000e-003	8.6100e-003	472.5143
Hotel	10.5674	0.1140	1.0360	0.8703	6.2200e-003		0.0787	0.0787		0.0787	0.0787		1,243.2210	1,243.2210	0.0238	0.0228	1,250.6088
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	9.04616	0.0976	0.8869	0.7450	5.3200e-003		0.0674	0.0674		0.0674	0.0674		1,064.2540	1,064.2540	0.0204	0.0195	1,070.5783
Regional Shopping Center	0.229151	2.4700e-003	0.0225	0.0189	1.3000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003		26.9589	26.9589	5.2000e-004	4.9000e-004	27.1191
User Defined Recreational	1.50769	0.0163	0.1478	0.1242	8.9000e-004		0.0112	0.0112		0.0112	0.0112		177.3757	177.3757	3.4000e-003	3.2500e-003	178.4297
Total		**0.3178**	**2.8889**	**2.4267**	**0.0173**		**0.2196**	**0.2196**		**0.2196**	**0.2196**		**3,466.7030**	**3,466.7030**	**0.0665**	**0.0635**	**3,487.3039**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Unmitigated	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.6235					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.6773					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0151	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Total	**5.3159**	**1.4900e-003**	**0.1621**	**1.0000e-005**		**5.8000e-004**	**5.8000e-004**		**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**		**0.3691**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.6235					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.6773					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0151	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Total	**5.3159**	**1.4900e-003**	**0.1621**	**1.0000e-005**		**5.8000e-004**	**5.8000e-004**		**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**		**0.3691**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ATTACHMENT C

PROPOSED PROJECT CALEEMOD GHG MODEL OUTPUTS

Bedford Marketplace (Dirt Import Process - Mitigated)

San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Bank (with Drive-Through)	6.00	1000sqft	0.14	6,000.00	0
Day-Care Center	9.99	1000sqft	0.23	9,990.00	0
Other Asphalt Surfaces	408.85	1000sqft	9.39	408,852.00	0
Parking Lot	890.00	Space	8.17	356,000.00	0
Health Club	38.00	1000sqft	0.87	38,000.00	0
High Turnover (Sit Down Restaurant)	5.83	1000sqft	0.13	5,826.00	0
Hotel	135.00	Room	0.57	88,730.00	0
Quality Restaurant	13.20	1000sqft	0.30	13,200.00	0
User Defined Recreational	2.20	User Defined Unit	0.05	2,200.00	0
Automobile Care Center	3.60	1000sqft	0.08	3,600.00	0
Gasoline/Service Station	18.00	Pump	0.09	4,000.00	0
Regional Shopping Center	51.00	1000sqft	1.17	51,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Net Land Area per the Site Plan is +/-21.2 acres.

Construction Phase - The Dirt Import Process anticipated to 126 days.

Off-road Equipment - Hours are based on an 8-hour workday.

Off-road Equipment - Equipment adjusted per information provided by the Project Applicant.

Off-road Equipment - Equipment adjusted per information provided by the Project Applicant.

Trips and VMT - Hauling trips based on the amount of import and the 15 cubic yard hauling capacity.

Grading - For purposes of analysis, total acres graded per day is based on the equipment specific grading rates (CalEEMod Appendix A) and the equipment list.

Architectural Coating -

Vehicle Trips - Construction Run Only.

Energy Use - Construction Run Only.

Water And Wastewater - Construction Run Only.

Solid Waste - Construction Run Only.

Construction Off-road Equipment Mitigation - All equipment operating at >150 HP shall comply with EPA/CARB Tier 4 emissions standards

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	35.00	126.00
tblConstructionPhase	NumDays	10.00	126.00

tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	3.03	0.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	6.62	0.00
tblEnergyUse	LightingElect	5.44	0.00
tblEnergyUse	LightingElect	0.35	0.00
tblEnergyUse	LightingElect	6.62	0.00
tblEnergyUse	LightingElect	5.61	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	1.49	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	28.48	0.00
tblEnergyUse	NT24E	6.23	0.00
tblEnergyUse	NT24E	28.48	0.00
tblEnergyUse	NT24E	2.44	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	1.79	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	195.77	0.00
tblEnergyUse	NT24NG	4.86	0.00
tblEnergyUse	NT24NG	195.77	0.00

tblEnergyUse	NT24NG	0.30	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	2.78	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	12.38	0.00
tblEnergyUse	T24E	6.47	0.00
tblEnergyUse	T24E	12.38	0.00
tblEnergyUse	T24E	4.58	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	6.97	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	77.67	0.00
tblEnergyUse	T24NG	55.15	0.00
tblEnergyUse	T24NG	77.67	0.00
tblEnergyUse	T24NG	1.92	0.00
tblGrading	AcresOfGrading	378.00	441.00
tblGrading	AcresOfGrading	0.00	126.00
tblGrading	MaterialExported	0.00	440,000.00
tblLandUse	LandUseSquareFeet	408,850.00	408,852.00
tblLandUse	LandUseSquareFeet	5,830.00	5,826.00
tblLandUse	LandUseSquareFeet	196,020.00	88,730.00
tblLandUse	LandUseSquareFeet	0.00	2,200.00
tblLandUse	LandUseSquareFeet	2,541.15	4,000.00

tblLandUse	LotAcreage	8.01	8.17
tblLandUse	LotAcreage	4.50	0.57
tblLandUse	LotAcreage	0.00	0.05
tblLandUse	LotAcreage	0.06	0.09
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblSolidWaste	SolidWasteGenerationRate	13.75	0.00
tblSolidWaste	SolidWasteGenerationRate	5.60	0.00
tblSolidWaste	SolidWasteGenerationRate	12.99	0.00
tblSolidWaste	SolidWasteGenerationRate	9.70	0.00
tblSolidWaste	SolidWasteGenerationRate	216.60	0.00
tblSolidWaste	SolidWasteGenerationRate	69.38	0.00
tblSolidWaste	SolidWasteGenerationRate	73.91	0.00
tblSolidWaste	SolidWasteGenerationRate	12.04	0.00
tblSolidWaste	SolidWasteGenerationRate	53.55	0.00
tblTripsAndVMT	HaulingTripLength	20.00	6.00
tblTripsAndVMT	HaulingTripNumber	55,000.00	58,668.00
tblVehicleEF	HHD	1.24	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	3.46	7.82
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.92	2.4420e-003

tblVehicleEF	HHD	6,983.95	1,459.93
tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.07	7.65
tblVehicleEF	HHD	2.87	3.24
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004
tblVehicleEF	HHD	0.89	0.60
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	2.4200e-004	6.3700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004

tblVehicleEF	HHD	1.02	0.68
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4200e-004	6.3700e-004
tblVehicleEF	HHD	0.07	1.0000e-006
tblVehicleEF	HHD	1.17	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	2.52	7.65
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.80	2.2950e-003
tblVehicleEF	HHD	7,395.94	1,453.32
tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.97	7.40
tblVehicleEF	HHD	2.70	3.05
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	1.8400e-004	9.0000e-006

tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.84	0.62
tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.7000e-005	0.00
tblVehicleEF	HHD	1.8400e-004	9.0000e-006
tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.97	0.71
tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	1.34	0.03
tblVehicleEF	HHD	0.04	3.7740e-003
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	4.76	7.98
tblVehicleEF	HHD	0.58	0.36
tblVehicleEF	HHD	1.89	2.4140e-003
tblVehicleEF	HHD	6,415.00	1,454.79
tblVehicleEF	HHD	1,493.95	1,371.01
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	26.84	7.90
tblVehicleEF	HHD	2.83	3.15

tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.8160e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004
tblVehicleEF	HHD	0.96	0.56
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.08
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.06	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004
tblVehicleEF	HHD	1.10	0.64
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.09
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.07	1.0000e-006

tblVehicleEF	LDA	4.6640e-003	2.7950e-003
tblVehicleEF	LDA	6.4640e-003	0.06
tblVehicleEF	LDA	0.62	0.70
tblVehicleEF	LDA	1.32	2.22
tblVehicleEF	LDA	261.85	269.33
tblVehicleEF	LDA	59.28	55.48
tblVehicleEF	LDA	0.06	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.6230e-003	2.6640e-003
tblVehicleEF	LDA	6.1500e-004	5.4900e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.10	0.27
tblVehicleEF	LDA	5.3170e-003	3.2030e-003
tblVehicleEF	LDA	5.3900e-003	0.05

tblVehicleEF	LDA	0.76	0.86
tblVehicleEF	LDA	1.10	1.85
tblVehicleEF	LDA	286.52	294.16
tblVehicleEF	LDA	59.28	54.75
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.07	0.21
tblVehicleEF	LDA	2.8710e-003	2.9100e-003
tblVehicleEF	LDA	6.1100e-004	5.4200e-004
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.08	0.23
tblVehicleEF	LDA	4.5320e-003	2.7260e-003
tblVehicleEF	LDA	6.4200e-003	0.06
tblVehicleEF	LDA	0.58	0.67
tblVehicleEF	LDA	1.30	2.19

tblVehicleEF	LDA	256.02	263.51
tblVehicleEF	LDA	59.28	55.41
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.25
tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.5640e-003	2.6070e-003
tblVehicleEF	LDA	6.1500e-004	5.4800e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.25
tblVehicleEF	LDA	0.09	0.27
tblVehicleEF	LDT1	0.02	8.1890e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.71	1.63
tblVehicleEF	LDT1	4.02	2.54
tblVehicleEF	LDT1	323.73	319.09
tblVehicleEF	LDT1	72.77	67.44

tblVehicleEF	LDT1	0.18	0.15
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.29	0.48
tblVehicleEF	LDT1	3.2600e-003	3.1580e-003
tblVehicleEF	LDT1	7.9900e-004	6.6700e-004
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.06	0.05
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT1	0.02	9.2860e-003
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	2.05	1.97
tblVehicleEF	LDT1	3.30	2.10
tblVehicleEF	LDT1	352.65	345.09
tblVehicleEF	LDT1	72.77	66.47
tblVehicleEF	LDT1	0.16	0.13
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003

tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.40	0.44
tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.24	0.41
tblVehicleEF	LDT1	3.5540e-003	3.4150e-003
tblVehicleEF	LDT1	7.8600e-004	6.5800e-004
tblVehicleEF	LDT1	0.40	0.44
tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.06	0.06
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.26	0.44
tblVehicleEF	LDT1	0.01	7.9980e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.62	1.55
tblVehicleEF	LDT1	3.95	2.49
tblVehicleEF	LDT1	316.91	312.93
tblVehicleEF	LDT1	72.77	67.36
tblVehicleEF	LDT1	0.17	0.14
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003

tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.28	0.48
tblVehicleEF	LDT1	3.1900e-003	3.0970e-003
tblVehicleEF	LDT1	7.9800e-004	6.6700e-004
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13
tblVehicleEF	LDT1	0.05	0.05
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT2	6.9330e-003	4.8260e-003
tblVehicleEF	LDT2	9.2890e-003	0.08
tblVehicleEF	LDT2	0.85	1.06
tblVehicleEF	LDT2	1.85	2.89
tblVehicleEF	LDT2	363.70	344.02
tblVehicleEF	LDT2	81.97	72.94
tblVehicleEF	LDT2	0.10	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11

tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.13	0.38
tblVehicleEF	LDT2	3.6440e-003	3.4040e-003
tblVehicleEF	LDT2	8.5100e-004	7.2200e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.14	0.42
tblVehicleEF	LDT2	7.8730e-003	5.5090e-003
tblVehicleEF	LDT2	7.7350e-003	0.07
tblVehicleEF	LDT2	1.04	1.30
tblVehicleEF	LDT2	1.53	2.39
tblVehicleEF	LDT2	397.09	369.57
tblVehicleEF	LDT2	81.97	71.94
tblVehicleEF	LDT2	0.09	0.09
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19

tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	3.9810e-003	3.6570e-003
tblVehicleEF	LDT2	8.4600e-004	7.1200e-004
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.11	0.35
tblVehicleEF	LDT2	6.7430e-003	4.7100e-003
tblVehicleEF	LDT2	9.2200e-003	0.08
tblVehicleEF	LDT2	0.81	1.01
tblVehicleEF	LDT2	1.82	2.84
tblVehicleEF	LDT2	355.82	337.97
tblVehicleEF	LDT2	81.97	72.85
tblVehicleEF	LDT2	0.09	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.58

tblVehicleEF	LDT2	0.12	0.38
tblVehicleEF	LDT2	3.5650e-003	3.3440e-003
tblVehicleEF	LDT2	8.5100e-004	7.2100e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.08	0.58
tblVehicleEF	LDT2	0.14	0.41
tblVehicleEF	LHD1	5.4860e-003	4.9840e-003
tblVehicleEF	LHD1	0.01	7.1410e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.77	1.07
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.99
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.26	1.69
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01

tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.29	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6200e-004	1.0900e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD1	5.4860e-003	5.0000e-003
tblVehicleEF	LHD1	0.01	7.3180e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.18	0.99
tblVehicleEF	LHD1	2.58	1.00
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.98
tblVehicleEF	LHD1	30.92	10.87

tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.12	1.58
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.27	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0370e-003	6.3960e-003
tblVehicleEF	LHD1	3.5800e-004	1.0800e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.30	0.09

tblVehicleEF	LHD1	5.4860e-003	4.9870e-003
tblVehicleEF	LHD1	0.01	7.1590e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.72	1.05
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.96
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.22	1.66
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005

tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6100e-004	1.0800e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD2	3.8190e-003	3.4060e-003
tblVehicleEF	LHD2	5.2410e-003	4.5240e-003
tblVehicleEF	LHD2	9.1660e-003	0.01
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.29	0.64
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.51
tblVehicleEF	LHD2	24.89	7.96
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.69	1.81
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01

tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7300e-004	7.9000e-005
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.14	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4160e-003
tblVehicleEF	LHD2	5.3190e-003	4.5750e-003
tblVehicleEF	LHD2	8.7380e-003	9.6870e-003
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.56	0.62
tblVehicleEF	LHD2	1.21	0.60
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.89
tblVehicleEF	LHD2	0.12	0.12

tblVehicleEF	LHD2	1.59	1.70
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7100e-004	7.8000e-005
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4070e-003
tblVehicleEF	LHD2	5.2490e-003	4.5300e-003

tblVehicleEF	LHD2	9.0820e-003	0.01
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.27	0.63
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.94
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.67	1.78
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7200e-004	7.9000e-005
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003

tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.16	0.25
tblVehicleEF	MCY	21.02	21.16
tblVehicleEF	MCY	9.91	8.77
tblVehicleEF	MCY	167.12	211.16
tblVehicleEF	MCY	46.87	61.87
tblVehicleEF	MCY	1.17	1.17
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84
tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.26	2.26
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.17	1.92
tblVehicleEF	MCY	2.0790e-003	2.0900e-003
tblVehicleEF	MCY	6.9500e-004	6.1200e-004
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84

tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.76	2.76
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.37	2.08
tblVehicleEF	MCY	0.41	0.32
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	21.14	21.29
tblVehicleEF	MCY	9.06	7.97
tblVehicleEF	MCY	167.12	211.14
tblVehicleEF	MCY	46.87	59.68
tblVehicleEF	MCY	0.99	0.99
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.19	2.19
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	1.87	1.64
tblVehicleEF	MCY	2.0790e-003	2.0890e-003
tblVehicleEF	MCY	6.7100e-004	5.9100e-004
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.69	2.68

tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.03	1.78
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	20.06	20.18
tblVehicleEF	MCY	9.53	8.41
tblVehicleEF	MCY	167.12	209.47
tblVehicleEF	MCY	46.87	61.06
tblVehicleEF	MCY	1.13	1.13
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.22	2.22
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.10	1.84
tblVehicleEF	MCY	2.0630e-003	2.0730e-003
tblVehicleEF	MCY	6.8600e-004	6.0400e-004
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.71	2.71
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.28	2.00

tblVehicleEF	MDV	0.01	6.6050e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.55	1.33
tblVehicleEF	MDV	3.59	3.53
tblVehicleEF	MDV	498.66	425.70
tblVehicleEF	MDV	110.76	90.07
tblVehicleEF	MDV	0.20	0.14
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.28	0.50
tblVehicleEF	MDV	5.0000e-003	4.2090e-003
tblVehicleEF	MDV	1.1710e-003	8.9100e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MDV	0.02	7.4780e-003
tblVehicleEF	MDV	0.02	0.08

tblVehicleEF	MDV	1.87	1.60
tblVehicleEF	MDV	2.99	2.92
tblVehicleEF	MDV	542.90	452.84
tblVehicleEF	MDV	110.76	88.84
tblVehicleEF	MDV	0.18	0.12
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.24	0.42
tblVehicleEF	MDV	5.4470e-003	4.4780e-003
tblVehicleEF	MDV	1.1600e-003	8.7900e-004
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22
tblVehicleEF	MDV	0.06	0.05
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.26	0.46
tblVehicleEF	MDV	0.01	6.4310e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.47	1.25
tblVehicleEF	MDV	3.53	3.47

tblVehicleEF	MDV	488.33	419.25
tblVehicleEF	MDV	110.76	89.97
tblVehicleEF	MDV	0.19	0.13
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.13	0.61
tblVehicleEF	MDV	0.28	0.49
tblVehicleEF	MDV	4.8960e-003	4.1450e-003
tblVehicleEF	MDV	1.1700e-003	8.9000e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.13	0.61
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.60	0.37
tblVehicleEF	MH	6.96	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00

tblVehicleEF	MH	1.64	4.70
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.2000e-004	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.44	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.74	0.37
tblVehicleEF	MH	6.31	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00

tblVehicleEF	MH	1.50	4.42
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.37	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.0900e-004	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.41	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.61	0.37
tblVehicleEF	MH	6.87	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00

tblVehicleEF	MH	1.61	4.62
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.1900e-004	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.43	0.00
tblVehicleEF	MHD	0.02	3.2250e-003
tblVehicleEF	MHD	4.1450e-003	6.0340e-003
tblVehicleEF	MHD	0.06	8.8310e-003
tblVehicleEF	MHD	0.33	0.34
tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	6.00	1.03

tblVehicleEF	MHD	155.10	71.06
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.43
tblVehicleEF	MHD	0.63	0.61
tblVehicleEF	MHD	1.08	2.22
tblVehicleEF	MHD	4.3700e-004	2.0190e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	4.1800e-004	1.9320e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.11
tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.4910e-003	6.7400e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4400e-004	8.3000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.11

tblVehicleEF	MHD	0.40	0.05
tblVehicleEF	MHD	0.02	3.0610e-003
tblVehicleEF	MHD	4.2290e-003	6.0860e-003
tblVehicleEF	MHD	0.05	8.4200e-003
tblVehicleEF	MHD	0.24	0.28
tblVehicleEF	MHD	0.32	0.56
tblVehicleEF	MHD	5.61	0.96
tblVehicleEF	MHD	164.29	72.29
tblVehicleEF	MHD	1,105.72	1,029.54
tblVehicleEF	MHD	53.92	8.32
tblVehicleEF	MHD	0.65	0.62
tblVehicleEF	MHD	1.01	2.09
tblVehicleEF	MHD	3.6900e-004	1.7050e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	3.5300e-004	1.6310e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.35	0.04
tblVehicleEF	MHD	1.5770e-003	6.8600e-004
tblVehicleEF	MHD	0.01	9.8100e-003

tblVehicleEF	MHD	6.3800e-004	8.2000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.38	0.05
tblVehicleEF	MHD	0.02	3.4660e-003
tblVehicleEF	MHD	4.1530e-003	6.0380e-003
tblVehicleEF	MHD	0.06	8.7320e-003
tblVehicleEF	MHD	0.46	0.42
tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	5.90	1.02
tblVehicleEF	MHD	142.41	69.34
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.40
tblVehicleEF	MHD	0.60	0.60
tblVehicleEF	MHD	1.06	2.18
tblVehicleEF	MHD	5.3200e-004	2.4540e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	5.0900e-004	2.3480e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02

tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	7.0500e-004	3.2200e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.13
tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.3710e-003	6.5800e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4300e-004	8.3000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	7.0500e-004	3.2200e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.13
tblVehicleEF	MHD	0.39	0.05
tblVehicleEF	OBUS	0.01	9.3650e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.27	0.49
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.67	2.81
tblVehicleEF	OBUS	70.21	68.33
tblVehicleEF	OBUS	1,126.32	1,507.23
tblVehicleEF	OBUS	71.08	22.19
tblVehicleEF	OBUS	0.32	0.39
tblVehicleEF	OBUS	1.10	1.47
tblVehicleEF	OBUS	1.1300e-004	1.5090e-003

tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.0800e-004	1.4440e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.41	0.13
tblVehicleEF	OBUS	6.8200e-004	6.5300e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2800e-004	2.2000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	OBUS	0.01	9.3930e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.26	0.47
tblVehicleEF	OBUS	0.75	1.22

tblVehicleEF	OBUS	6.11	2.57
tblVehicleEF	OBUS	73.34	68.71
tblVehicleEF	OBUS	1,126.32	1,507.28
tblVehicleEF	OBUS	71.08	21.80
tblVehicleEF	OBUS	0.33	0.39
tblVehicleEF	OBUS	1.02	1.35
tblVehicleEF	OBUS	9.5000e-005	1.2750e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	9.1000e-005	1.2200e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.05	0.09
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.39	0.13
tblVehicleEF	OBUS	7.1200e-004	6.5600e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.1800e-004	2.1600e-004
tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.07	0.11

tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.42	0.14
tblVehicleEF	OBUS	0.01	9.3640e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.28	0.51
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.62	2.79
tblVehicleEF	OBUS	65.88	67.80
tblVehicleEF	OBUS	1,126.32	1,507.24
tblVehicleEF	OBUS	71.08	22.15
tblVehicleEF	OBUS	0.31	0.39
tblVehicleEF	OBUS	1.08	1.44
tblVehicleEF	OBUS	1.3700e-004	1.8320e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.3100e-004	1.7520e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.41	0.13
tblVehicleEF	OBUS	6.4100e-004	6.4800e-004

tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2700e-004	2.1900e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3980e-003
tblVehicleEF	SBUS	0.07	3.9120e-003
tblVehicleEF	SBUS	5.64	1.82
tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.49	0.54
tblVehicleEF	SBUS	1,270.71	336.96
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.11
tblVehicleEF	SBUS	12.46	3.45
tblVehicleEF	SBUS	5.17	5.36
tblVehicleEF	SBUS	0.01	4.4720e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	4.2790e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03

tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004
tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.68	0.19
tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.28	0.02
tblVehicleEF	SBUS	0.01	3.2020e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004
tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.31	0.02
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.4900e-003
tblVehicleEF	SBUS	0.06	3.2450e-003
tblVehicleEF	SBUS	5.48	1.78
tblVehicleEF	SBUS	0.72	0.64
tblVehicleEF	SBUS	3.76	0.38
tblVehicleEF	SBUS	1,335.64	345.46
tblVehicleEF	SBUS	1,144.20	1,143.58
tblVehicleEF	SBUS	36.06	2.85

tblVehicleEF	SBUS	12.86	3.52
tblVehicleEF	SBUS	4.84	5.03
tblVehicleEF	SBUS	0.01	3.7780e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	3.6140e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003
tblVehicleEF	SBUS	0.67	0.19
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.23	0.02
tblVehicleEF	SBUS	0.01	3.2820e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.2700e-004	2.8000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003
tblVehicleEF	SBUS	0.96	0.27
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.25	0.02

tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3930e-003
tblVehicleEF	SBUS	0.07	4.0100e-003
tblVehicleEF	SBUS	5.85	1.87
tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.54	0.56
tblVehicleEF	SBUS	1,181.05	325.23
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.14
tblVehicleEF	SBUS	11.91	3.35
tblVehicleEF	SBUS	5.09	5.28
tblVehicleEF	SBUS	0.02	5.4310e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.02	5.1960e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003
tblVehicleEF	SBUS	0.68	0.19
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.29	0.02
tblVehicleEF	SBUS	0.01	3.0910e-003

tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003
tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.32	0.03
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.79	32.64
tblVehicleEF	UBUS	14.93	1.46
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.41
tblVehicleEF	UBUS	6.43	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004

tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.19	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.6230e-003	1.7200e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004
tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.30	0.08
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.08	0.02
tblVehicleEF	UBUS	9.90	32.64
tblVehicleEF	UBUS	12.23	1.20
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	16.98
tblVehicleEF	UBUS	5.98	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	0.02	3.2040e-003

tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	0.67	0.06
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.06	0.06
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.5760e-003	1.6800e-004
tblVehicleEF	UBUS	0.02	3.2040e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	2.69	4.28
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.16	0.07
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.80	32.64
tblVehicleEF	UBUS	14.43	1.42
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.36
tblVehicleEF	UBUS	6.31	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003

tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004
tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.17	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.6140e-003	1.7200e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004
tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.28	0.08
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00

tblVehicleTrips	CC_TTP	48.00	0.00
tblVehicleTrips	CC_TTP	74.40	0.00
tblVehicleTrips	CC_TTP	82.30	0.00
tblVehicleTrips	CC_TTP	79.00	0.00
tblVehicleTrips	CC_TTP	64.10	0.00
tblVehicleTrips	CC_TTP	72.50	0.00
tblVehicleTrips	CC_TTP	61.60	0.00
tblVehicleTrips	CC_TTP	69.00	0.00
tblVehicleTrips	CC_TTP	64.70	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	5.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00

tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TTP	33.00	0.00
tblVehicleTrips	CW_TTP	6.60	0.00
tblVehicleTrips	CW_TTP	12.70	0.00
tblVehicleTrips	CW_TTP	2.00	0.00
tblVehicleTrips	CW_TTP	16.90	0.00
tblVehicleTrips	CW_TTP	8.50	0.00
tblVehicleTrips	CW_TTP	19.40	0.00
tblVehicleTrips	CW_TTP	12.00	0.00
tblVehicleTrips	CW_TTP	16.30	0.00
tblVehicleTrips	DV_TP	51.00	0.00
tblVehicleTrips	DV_TP	26.00	0.00
tblVehicleTrips	DV_TP	58.00	0.00

tblVehicleTrips	DV_TP	27.00	0.00
tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	DV_TP	20.00	0.00
tblVehicleTrips	DV_TP	38.00	0.00
tblVehicleTrips	DV_TP	18.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	PB_TP	28.00	0.00
tblVehicleTrips	PB_TP	47.00	0.00
tblVehicleTrips	PB_TP	14.00	0.00
tblVehicleTrips	PB_TP	59.00	0.00
tblVehicleTrips	PB_TP	9.00	0.00
tblVehicleTrips	PB_TP	43.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	44.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	21.00	0.00
tblVehicleTrips	PR_TP	27.00	0.00
tblVehicleTrips	PR_TP	28.00	0.00
tblVehicleTrips	PR_TP	14.00	0.00
tblVehicleTrips	PR_TP	52.00	0.00
tblVehicleTrips	PR_TP	37.00	0.00
tblVehicleTrips	PR_TP	58.00	0.00
tblVehicleTrips	PR_TP	38.00	0.00
tblVehicleTrips	PR_TP	54.00	0.00
tblVehicleTrips	ST_TR	23.72	0.00
tblVehicleTrips	ST_TR	86.32	0.00
tblVehicleTrips	ST_TR	6.21	0.00

tblVehicleTrips	ST_TR	168.56	0.00
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	158.37	0.00
tblVehicleTrips	ST_TR	8.19	0.00
tblVehicleTrips	ST_TR	94.36	0.00
tblVehicleTrips	ST_TR	49.97	0.00
tblVehicleTrips	SU_TR	11.88	0.00
tblVehicleTrips	SU_TR	31.90	0.00
tblVehicleTrips	SU_TR	5.83	0.00
tblVehicleTrips	SU_TR	168.56	0.00
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	131.84	0.00
tblVehicleTrips	SU_TR	5.95	0.00
tblVehicleTrips	SU_TR	72.16	0.00
tblVehicleTrips	SU_TR	25.24	0.00
tblVehicleTrips	WD_TR	23.72	0.00
tblVehicleTrips	WD_TR	148.15	0.00
tblVehicleTrips	WD_TR	74.06	0.00
tblVehicleTrips	WD_TR	168.56	0.00
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	127.15	0.00
tblVehicleTrips	WD_TR	8.17	0.00
tblVehicleTrips	WD_TR	89.95	0.00
tblVehicleTrips	WD_TR	42.70	0.00
tblWater	IndoorWaterUseRate	338,691.99	0.00
tblWater	IndoorWaterUseRate	237,737.51	0.00
tblWater	IndoorWaterUseRate	428,466.78	0.00

tblWater	IndoorWaterUseRate	239,074.00	0.00
tblWater	IndoorWaterUseRate	2,247,439.47	0.00
tblWater	IndoorWaterUseRate	1,769,601.54	0.00
tblWater	IndoorWaterUseRate	3,424,513.95	0.00
tblWater	IndoorWaterUseRate	4,006,645.00	0.00
tblWater	IndoorWaterUseRate	3,777,698.60	0.00
tblWater	OutdoorWaterUseRate	207,585.41	0.00
tblWater	OutdoorWaterUseRate	145,710.09	0.00
tblWater	OutdoorWaterUseRate	1,101,771.72	0.00
tblWater	OutdoorWaterUseRate	146,529.23	0.00
tblWater	OutdoorWaterUseRate	1,377,462.90	0.00
tblWater	OutdoorWaterUseRate	112,953.29	0.00
tblWater	OutdoorWaterUseRate	380,501.55	0.00
tblWater	OutdoorWaterUseRate	255,743.30	0.00
tblWater	OutdoorWaterUseRate	2,315,363.66	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.5609	9.4083	3.4734	0.0163	1.2521	0.2188	1.4709	0.4993	0.2016	0.7009	0.0000	1,510.5165	1,510.5165	0.2707	0.0000	1,517.2831
Maximum	**0.5609**	**9.4083**	**3.4734**	**0.0163**	**1.2521**	**0.2188**	**1.4709**	**0.4993**	**0.2016**	**0.7009**	**0.0000**	**1,510.5165**	**1,510.5165**	**0.2707**	**0.0000**	**1,517.2831**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.2857	5.9691	3.3180	0.0163	0.5907	0.0687	0.6594	0.2228	0.0640	0.2868	0.0000	1,510.5159	1,510.5159	0.2707	0.0000	1,517.2824
Maximum	**0.2857**	**5.9691**	**3.3180**	**0.0163**	**0.5907**	**0.0687**	**0.6594**	**0.2228**	**0.0640**	**0.2868**	**0.0000**	**1,510.5159**	**1,510.5159**	**0.2707**	**0.0000**	**1,517.2824**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**49.07**	**36.56**	**4.47**	**0.00**	**52.83**	**68.60**	**55.17**	**55.38**	**68.25**	**59.08**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2020	3-31-2020	5.0925	3.1763
2	4-1-2020	6-30-2020	4.7955	3.0056
		Highest	5.0925	3.1763

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9693	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.9693**	**1.9000e-004**	**0.0203**	**0.0000**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.0393**	**0.0393**	**1.0000e-004**	**0.0000**	**0.0419**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9693	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.9693**	**1.9000e-004**	**0.0203**	**0.0000**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.0393**	**0.0393**	**1.0000e-004**	**0.0000**	**0.0419**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Import Activities	Site Preparation	1/1/2020	6/24/2020	5	126	
2	Grading	Grading	1/1/2020	6/24/2020	5	126	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 441

Acres of Paving: 17.56

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Import Activities	Off-Highway Trucks	1	8.00	402	0.38
Import Activities	Other Construction Equipment	1	8.00	172	0.42
Import Activities	Rubber Tired Dozers	1	8.00	247	0.40
Import Activities	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Excavators	0	8.00	158	0.38
Grading	Graders	0	8.00	187	0.41
Grading	Off-Highway Trucks	1	8.00	402	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	3	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Import Activities	4	10.00	0.00	58,668.00	14.70	6.90	6.00	LD_Mix	HDT_Mix	HHDT
Grading	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Import Activities - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4711	0.0000	0.4711	0.2195	0.0000	0.2195	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1541	1.5750	0.9036	1.9500e-003		0.0753	0.0753		0.0693	0.0693	0.0000	171.7744	171.7744	0.0556	0.0000	173.1633
Total	**0.1541**	**1.5750**	**0.9036**	**1.9500e-003**	**0.4711**	**0.0753**	**0.5464**	**0.2195**	**0.0693**	**0.2888**	**0.0000**	**171.7744**	**171.7744**	**0.0556**	**0.0000**	**173.1633**

3.2 Import Activities - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.1022	4.4943	0.6036	9.9100e-003	0.1519	7.3300e-003	0.1592	0.0418	7.0200e-003	0.0488	0.0000	953.2314	953.2314	0.0944	0.0000	955.5919
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1100e-003	2.4500e-003	0.0244	7.0000e-005	6.9100e-003	5.0000e-005	6.9500e-003	1.8300e-003	4.0000e-005	1.8800e-003	0.0000	5.9209	5.9209	1.8000e-004	0.0000	5.9253
Total	**0.1054**	**4.4968**	**0.6280**	**9.9800e-003**	**0.1588**	**7.3800e-003**	**0.1662**	**0.0436**	**7.0600e-003**	**0.0507**	**0.0000**	**959.1523**	**959.1523**	**0.0946**	**0.0000**	**961.5172**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1837	0.0000	0.1837	0.0856	0.0000	0.0856	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0927	0.8896	0.8849	1.9500e-003		0.0412	0.0412		0.0380	0.0380	0.0000	171.7742	171.7742	0.0556	0.0000	173.1631
Total	**0.0927**	**0.8896**	**0.8849**	**1.9500e-003**	**0.1837**	**0.0412**	**0.2249**	**0.0856**	**0.0380**	**0.1236**	**0.0000**	**171.7742**	**171.7742**	**0.0556**	**0.0000**	**173.1631**

3.2 Import Activities - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.1022	4.4943	0.6036	9.9100e-003	0.1519	7.3300e-003	0.1592	0.0418	7.0200e-003	0.0488	0.0000	953.2314	953.2314	0.0944	0.0000	955.5919
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1100e-003	2.4500e-003	0.0244	7.0000e-005	6.9100e-003	5.0000e-005	6.9500e-003	1.8300e-003	4.0000e-005	1.8800e-003	0.0000	5.9209	5.9209	1.8000e-004	0.0000	5.9253
Total	**0.1054**	**4.4968**	**0.6280**	**9.9800e-003**	**0.1588**	**7.3800e-003**	**0.1662**	**0.0436**	**7.0600e-003**	**0.0507**	**0.0000**	**959.1523**	**959.1523**	**0.0946**	**0.0000**	**961.5172**

3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.6132	0.0000	0.6132	0.2338	0.0000	0.2338	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2974	3.3334	1.9100	4.2300e-003		0.1361	0.1361		0.1252	0.1252	0.0000	371.8928	371.8928	0.1203	0.0000	374.8997
Total	**0.2974**	**3.3334**	**1.9100**	**4.2300e-003**	**0.6132**	**0.1361**	**0.7493**	**0.2338**	**0.1252**	**0.3590**	**0.0000**	**371.8928**	**371.8928**	**0.1203**	**0.0000**	**374.8997**

3.3 Grading - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0500e-003	3.1800e-003	0.0318	9.0000e-005	8.9800e-003	6.0000e-005	9.0400e-003	2.3800e-003	6.0000e-005	2.4400e-003	0.0000	7.6971	7.6971	2.3000e-004	0.0000	7.7029
Total	**4.0500e-003**	**3.1800e-003**	**0.0318**	**9.0000e-005**	**8.9800e-003**	**6.0000e-005**	**9.0400e-003**	**2.3800e-003**	**6.0000e-005**	**2.4400e-003**	**0.0000**	**7.6971**	**7.6971**	**2.3000e-004**	**0.0000**	**7.7029**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2392	0.0000	0.2392	0.0912	0.0000	0.0912	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0836	0.5796	1.7734	4.2300e-003		0.0201	0.0201		0.0189	0.0189	0.0000	371.8923	371.8923	0.1203	0.0000	374.8993
Total	**0.0836**	**0.5796**	**1.7734**	**4.2300e-003**	**0.2392**	**0.0201**	**0.2593**	**0.0912**	**0.0189**	**0.1101**	**0.0000**	**371.8923**	**371.8923**	**0.1203**	**0.0000**	**374.8993**

3.3 Grading - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0500e-003	3.1800e-003	0.0318	9.0000e-005	8.9800e-003	6.0000e-005	9.0400e-003	2.3800e-003	6.0000e-005	2.4400e-003	0.0000	7.6971	7.6971	2.3000e-004	0.0000	7.7029
Total	**4.0500e-003**	**3.1800e-003**	**0.0318**	**9.0000e-005**	**8.9800e-003**	**6.0000e-005**	**9.0400e-003**	**2.3800e-003**	**6.0000e-005**	**2.4400e-003**	**0.0000**	**7.6971**	**7.6971**	**2.3000e-004**	**0.0000**	**7.7029**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	0.00	0.00	0.00		
Bank (with Drive-Through)	0.00	0.00	0.00		
Day-Care Center	0.00	0.00	0.00		
Gasoline/Service Station	0.00	0.00	0.00		
Health Club	0.00	0.00	0.00		
High Turnover (Sit Down Restaurant)	0.00	0.00	0.00		
Hotel	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Quality Restaurant	0.00	0.00	0.00		
Regional Shopping Center	0.00	0.00	0.00		
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Bank (with Drive-Through)	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Day-Care Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Gasoline/Service Station	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Health Club	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
High Turnover (Sit Down	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Hotel	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Quality Restaurant	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
User Defined Recreational	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Bank (with Drive-Through)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Day-Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Gasoline/Service Station	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Health Club	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
High Turnover (Sit Down Restaurant)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Hotel	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Other Asphalt Surfaces	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Parking Lot	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Quality Restaurant	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Regional Shopping Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
User Defined Recreational	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.9693	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419
Unmitigated	0.9693	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1138					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8536					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.8900e-003	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419
Total	**0.9693**	**1.9000e-004**	**0.0203**	**0.0000**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.0393**	**0.0393**	**1.0000e-004**	**0.0000**	**0.0419**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1138					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8536					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.8900e-003	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419
Total	**0.9693**	**1.9000e-004**	**0.0203**	**0.0000**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.0393**	**0.0393**	**1.0000e-004**	**0.0000**	**0.0419**

7.0 Water Detail

7.1 Mitigation Measures Water

Bedford Marketplace (Dirt Import Process - Mitigated) - San Bernardino-South Coast County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	0 / 0	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0 / 0	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0 / 0	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	0 / 0	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0 / 0	0.0000	0.0000	0.0000	0.0000
Hotel	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0 / 0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	0 / 0	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0 / 0	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0 / 0	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	0 / 0	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0 / 0	0.0000	0.0000	0.0000	0.0000
Hotel	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0 / 0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Bedford Marketplace (Construction Process - Mitigated)

San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Bank (with Drive-Through)	6.00	1000sqft	0.14	6,000.00	0
Day-Care Center	9.99	1000sqft	0.23	9,990.00	0
Other Asphalt Surfaces	408.85	1000sqft	9.39	408,852.00	0
Parking Lot	890.00	Space	8.17	356,000.00	0
Health Club	38.00	1000sqft	0.87	38,000.00	0
High Turnover (Sit Down Restaurant)	5.83	1000sqft	0.13	5,826.00	0
Hotel	135.00	Room	0.57	88,730.00	0
Quality Restaurant	13.20	1000sqft	0.30	13,200.00	0
User Defined Recreational	2.20	User Defined Unit	0.05	2,200.00	0
Automobile Care Center	3.60	1000sqft	0.08	3,600.00	0
Gasoline/Service Station	18.00	Pump	0.09	4,000.00	0
Regional Shopping Center	51.00	1000sqft	1.17	51,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Net Land Area per the Site Plan is +/-21.2 acres.

Construction Phase - Construction Scheduled adjsuted to meet the 2021 Opening Year.

Off-road Equipment - Hours are based on an 8-hour workday.

Off-road Equipment - Hours are based on an 8-hour workday

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Grading - For purposes of analysis, total acres graded per day is based on the equipment specific grading rates (CalEEMod Appendix A) and the equipment list.

Architectural Coating - Rule 1113

Vehicle Trips - Construction Run Only.

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Energy Use - Construction Run Only.

Water And Wastewater - Construction Run Only.

Solid Waste - Construction Run Only.

Construction Off-road Equipment Mitigation - All equipment operating at >150 HP are required to be equipped with Tier 4 engines

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	50.00
tblArchitecturalCoating	EF_Parking	100.00	50.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

Bedford Marketplace (Construction Process - Mitigated) - San Bernardino-South Coast County, Annual

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	370.00	350.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	3.03	0.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	6.62	0.00
tblEnergyUse	LightingElect	5.44	0.00
tblEnergyUse	LightingElect	0.35	0.00
tblEnergyUse	LightingElect	6.62	0.00
tblEnergyUse	LightingElect	5.61	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	1.49	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	28.48	0.00
tblEnergyUse	NT24E	6.23	0.00
tblEnergyUse	NT24E	28.48	0.00
tblEnergyUse	NT24E	2.44	0.00

tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	1.79	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	195.77	0.00
tblEnergyUse	NT24NG	4.86	0.00
tblEnergyUse	NT24NG	195.77	0.00
tblEnergyUse	NT24NG	0.30	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	2.78	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	12.38	0.00
tblEnergyUse	T24E	6.47	0.00
tblEnergyUse	T24E	12.38	0.00
tblEnergyUse	T24E	4.58	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	6.97	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	77.67	0.00
tblEnergyUse	T24NG	55.15	0.00
tblEnergyUse	T24NG	77.67	0.00
tblEnergyUse	T24NG	1.92	0.00

Bedford Marketplace (Construction Process - Mitigated) - San Bernardino-South Coast County, Annual

tblGrading	AcresOfGrading	87.50	140.00
tblGrading	AcresOfGrading	0.00	35.00
tblLandUse	LandUseSquareFeet	196,020.00	88,730.00
tblLandUse	LandUseSquareFeet	0.00	2,200.00
tblLandUse	LandUseSquareFeet	2,541.15	4,000.00
tblLandUse	LotAcreage	8.01	8.17
tblLandUse	LotAcreage	4.50	0.57
tblLandUse	LotAcreage	0.00	0.05
tblLandUse	LotAcreage	0.06	0.09
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblSolidWaste	SolidWasteGenerationRate	13.75	0.00
tblSolidWaste	SolidWasteGenerationRate	5.60	0.00
tblSolidWaste	SolidWasteGenerationRate	12.99	0.00
tblSolidWaste	SolidWasteGenerationRate	9.70	0.00
tblSolidWaste	SolidWasteGenerationRate	216.60	0.00
tblSolidWaste	SolidWasteGenerationRate	69.38	0.00
tblSolidWaste	SolidWasteGenerationRate	73.91	0.00
tblSolidWaste	SolidWasteGenerationRate	12.04	0.00
tblSolidWaste	SolidWasteGenerationRate	53.55	0.00
tblVehicleEF	HHD	1.24	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	3.46	7.82
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.92	2.4420e-003

tblVehicleEF	HHD	6,983.95	1,459.93
tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.07	7.65
tblVehicleEF	HHD	2.87	3.24
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004
tblVehicleEF	HHD	0.89	0.60
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	2.4200e-004	6.3700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004

tblVehicleEF	HHD	1.02	0.68
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4200e-004	6.3700e-004
tblVehicleEF	HHD	0.07	1.0000e-006
tblVehicleEF	HHD	1.17	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	2.52	7.65
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.80	2.2950e-003
tblVehicleEF	HHD	7,395.94	1,453.32
tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.97	7.40
tblVehicleEF	HHD	2.70	3.05
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	1.8400e-004	9.0000e-006

tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.84	0.62
tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.7000e-005	0.00
tblVehicleEF	HHD	1.8400e-004	9.0000e-006
tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.97	0.71
tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	1.34	0.03
tblVehicleEF	HHD	0.04	3.7740e-003
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	4.76	7.98
tblVehicleEF	HHD	0.58	0.36
tblVehicleEF	HHD	1.89	2.4140e-003
tblVehicleEF	HHD	6,415.00	1,454.79
tblVehicleEF	HHD	1,493.95	1,371.01
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	26.84	7.90
tblVehicleEF	HHD	2.83	3.15

tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.8160e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004
tblVehicleEF	HHD	0.96	0.56
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.08
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.06	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004
tblVehicleEF	HHD	1.10	0.64
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.09
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.07	1.0000e-006

tblVehicleEF	LDA	4.6640e-003	2.7950e-003
tblVehicleEF	LDA	6.4640e-003	0.06
tblVehicleEF	LDA	0.62	0.70
tblVehicleEF	LDA	1.32	2.22
tblVehicleEF	LDA	261.85	269.33
tblVehicleEF	LDA	59.28	55.48
tblVehicleEF	LDA	0.06	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.6230e-003	2.6640e-003
tblVehicleEF	LDA	6.1500e-004	5.4900e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.10	0.27
tblVehicleEF	LDA	5.3170e-003	3.2030e-003
tblVehicleEF	LDA	5.3900e-003	0.05

tblVehicleEF	LDA	0.76	0.86
tblVehicleEF	LDA	1.10	1.85
tblVehicleEF	LDA	286.52	294.16
tblVehicleEF	LDA	59.28	54.75
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.07	0.21
tblVehicleEF	LDA	2.8710e-003	2.9100e-003
tblVehicleEF	LDA	6.1100e-004	5.4200e-004
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.08	0.23
tblVehicleEF	LDA	4.5320e-003	2.7260e-003
tblVehicleEF	LDA	6.4200e-003	0.06
tblVehicleEF	LDA	0.58	0.67
tblVehicleEF	LDA	1.30	2.19

tblVehicleEF	LDA	256.02	263.51
tblVehicleEF	LDA	59.28	55.41
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.25
tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.5640e-003	2.6070e-003
tblVehicleEF	LDA	6.1500e-004	5.4800e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.25
tblVehicleEF	LDA	0.09	0.27
tblVehicleEF	LDT1	0.02	8.1890e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.71	1.63
tblVehicleEF	LDT1	4.02	2.54
tblVehicleEF	LDT1	323.73	319.09
tblVehicleEF	LDT1	72.77	67.44

tblVehicleEF	LDT1	0.18	0.15
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.29	0.48
tblVehicleEF	LDT1	3.2600e-003	3.1580e-003
tblVehicleEF	LDT1	7.9900e-004	6.6700e-004
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.06	0.05
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT1	0.02	9.2860e-003
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	2.05	1.97
tblVehicleEF	LDT1	3.30	2.10
tblVehicleEF	LDT1	352.65	345.09
tblVehicleEF	LDT1	72.77	66.47
tblVehicleEF	LDT1	0.16	0.13
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003

tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.40	0.44
tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.24	0.41
tblVehicleEF	LDT1	3.5540e-003	3.4150e-003
tblVehicleEF	LDT1	7.8600e-004	6.5800e-004
tblVehicleEF	LDT1	0.40	0.44
tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.06	0.06
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.26	0.44
tblVehicleEF	LDT1	0.01	7.9980e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.62	1.55
tblVehicleEF	LDT1	3.95	2.49
tblVehicleEF	LDT1	316.91	312.93
tblVehicleEF	LDT1	72.77	67.36
tblVehicleEF	LDT1	0.17	0.14
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003

tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.28	0.48
tblVehicleEF	LDT1	3.1900e-003	3.0970e-003
tblVehicleEF	LDT1	7.9800e-004	6.6700e-004
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13
tblVehicleEF	LDT1	0.05	0.05
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT2	6.9330e-003	4.8260e-003
tblVehicleEF	LDT2	9.2890e-003	0.08
tblVehicleEF	LDT2	0.85	1.06
tblVehicleEF	LDT2	1.85	2.89
tblVehicleEF	LDT2	363.70	344.02
tblVehicleEF	LDT2	81.97	72.94
tblVehicleEF	LDT2	0.10	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11

tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.13	0.38
tblVehicleEF	LDT2	3.6440e-003	3.4040e-003
tblVehicleEF	LDT2	8.5100e-004	7.2200e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.14	0.42
tblVehicleEF	LDT2	7.8730e-003	5.5090e-003
tblVehicleEF	LDT2	7.7350e-003	0.07
tblVehicleEF	LDT2	1.04	1.30
tblVehicleEF	LDT2	1.53	2.39
tblVehicleEF	LDT2	397.09	369.57
tblVehicleEF	LDT2	81.97	71.94
tblVehicleEF	LDT2	0.09	0.09
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19

tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	3.9810e-003	3.6570e-003
tblVehicleEF	LDT2	8.4600e-004	7.1200e-004
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.11	0.35
tblVehicleEF	LDT2	6.7430e-003	4.7100e-003
tblVehicleEF	LDT2	9.2200e-003	0.08
tblVehicleEF	LDT2	0.81	1.01
tblVehicleEF	LDT2	1.82	2.84
tblVehicleEF	LDT2	355.82	337.97
tblVehicleEF	LDT2	81.97	72.85
tblVehicleEF	LDT2	0.09	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.58

tblVehicleEF	LDT2	0.12	0.38
tblVehicleEF	LDT2	3.5650e-003	3.3440e-003
tblVehicleEF	LDT2	8.5100e-004	7.2100e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.08	0.58
tblVehicleEF	LDT2	0.14	0.41
tblVehicleEF	LHD1	5.4860e-003	4.9840e-003
tblVehicleEF	LHD1	0.01	7.1410e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.77	1.07
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.99
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.26	1.69
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01

tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.29	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6200e-004	1.0900e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD1	5.4860e-003	5.0000e-003
tblVehicleEF	LHD1	0.01	7.3180e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.18	0.99
tblVehicleEF	LHD1	2.58	1.00
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.98
tblVehicleEF	LHD1	30.92	10.87

tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.12	1.58
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.27	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0370e-003	6.3960e-003
tblVehicleEF	LHD1	3.5800e-004	1.0800e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.30	0.09

tblVehicleEF	LHD1	5.4860e-003	4.9870e-003
tblVehicleEF	LHD1	0.01	7.1590e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.72	1.05
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.96
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.22	1.66
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005

tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6100e-004	1.0800e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD2	3.8190e-003	3.4060e-003
tblVehicleEF	LHD2	5.2410e-003	4.5240e-003
tblVehicleEF	LHD2	9.1660e-003	0.01
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.29	0.64
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.51
tblVehicleEF	LHD2	24.89	7.96
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.69	1.81
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01

tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7300e-004	7.9000e-005
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.14	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4160e-003
tblVehicleEF	LHD2	5.3190e-003	4.5750e-003
tblVehicleEF	LHD2	8.7380e-003	9.6870e-003
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.56	0.62
tblVehicleEF	LHD2	1.21	0.60
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.89
tblVehicleEF	LHD2	0.12	0.12

tblVehicleEF	LHD2	1.59	1.70
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7100e-004	7.8000e-005
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4070e-003
tblVehicleEF	LHD2	5.2490e-003	4.5300e-003

tblVehicleEF	LHD2	9.0820e-003	0.01
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.27	0.63
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.94
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.67	1.78
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7200e-004	7.9000e-005
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003

tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.16	0.25
tblVehicleEF	MCY	21.02	21.16
tblVehicleEF	MCY	9.91	8.77
tblVehicleEF	MCY	167.12	211.16
tblVehicleEF	MCY	46.87	61.87
tblVehicleEF	MCY	1.17	1.17
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84
tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.26	2.26
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.17	1.92
tblVehicleEF	MCY	2.0790e-003	2.0900e-003
tblVehicleEF	MCY	6.9500e-004	6.1200e-004
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84

tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.76	2.76
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.37	2.08
tblVehicleEF	MCY	0.41	0.32
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	21.14	21.29
tblVehicleEF	MCY	9.06	7.97
tblVehicleEF	MCY	167.12	211.14
tblVehicleEF	MCY	46.87	59.68
tblVehicleEF	MCY	0.99	0.99
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.19	2.19
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	1.87	1.64
tblVehicleEF	MCY	2.0790e-003	2.0890e-003
tblVehicleEF	MCY	6.7100e-004	5.9100e-004
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.69	2.68

tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.03	1.78
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	20.06	20.18
tblVehicleEF	MCY	9.53	8.41
tblVehicleEF	MCY	167.12	209.47
tblVehicleEF	MCY	46.87	61.06
tblVehicleEF	MCY	1.13	1.13
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.22	2.22
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.10	1.84
tblVehicleEF	MCY	2.0630e-003	2.0730e-003
tblVehicleEF	MCY	6.8600e-004	6.0400e-004
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.71	2.71
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.28	2.00

tblVehicleEF	MDV	0.01	6.6050e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.55	1.33
tblVehicleEF	MDV	3.59	3.53
tblVehicleEF	MDV	498.66	425.70
tblVehicleEF	MDV	110.76	90.07
tblVehicleEF	MDV	0.20	0.14
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.28	0.50
tblVehicleEF	MDV	5.0000e-003	4.2090e-003
tblVehicleEF	MDV	1.1710e-003	8.9100e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MDV	0.02	7.4780e-003
tblVehicleEF	MDV	0.02	0.08

tblVehicleEF	MDV	1.87	1.60
tblVehicleEF	MDV	2.99	2.92
tblVehicleEF	MDV	542.90	452.84
tblVehicleEF	MDV	110.76	88.84
tblVehicleEF	MDV	0.18	0.12
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.24	0.42
tblVehicleEF	MDV	5.4470e-003	4.4780e-003
tblVehicleEF	MDV	1.1600e-003	8.7900e-004
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22
tblVehicleEF	MDV	0.06	0.05
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.26	0.46
tblVehicleEF	MDV	0.01	6.4310e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.47	1.25
tblVehicleEF	MDV	3.53	3.47

tblVehicleEF	MDV	488.33	419.25
tblVehicleEF	MDV	110.76	89.97
tblVehicleEF	MDV	0.19	0.13
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.13	0.61
tblVehicleEF	MDV	0.28	0.49
tblVehicleEF	MDV	4.8960e-003	4.1450e-003
tblVehicleEF	MDV	1.1700e-003	8.9000e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.13	0.61
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.60	0.37
tblVehicleEF	MH	6.96	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00

tblVehicleEF	MH	1.64	4.70
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.2000e-004	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.44	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.74	0.37
tblVehicleEF	MH	6.31	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00

tblVehicleEF	MH	1.50	4.42
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.37	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.0900e-004	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.41	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.61	0.37
tblVehicleEF	MH	6.87	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00

tblVehicleEF	MH	1.61	4.62
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.1900e-004	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.43	0.00
tblVehicleEF	MHD	0.02	3.2250e-003
tblVehicleEF	MHD	4.1450e-003	6.0340e-003
tblVehicleEF	MHD	0.06	8.8310e-003
tblVehicleEF	MHD	0.33	0.34
tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	6.00	1.03

tblVehicleEF	MHD	155.10	71.06
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.43
tblVehicleEF	MHD	0.63	0.61
tblVehicleEF	MHD	1.08	2.22
tblVehicleEF	MHD	4.3700e-004	2.0190e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	4.1800e-004	1.9320e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.11
tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.4910e-003	6.7400e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4400e-004	8.3000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.11

tblVehicleEF	MHD	0.40	0.05
tblVehicleEF	MHD	0.02	3.0610e-003
tblVehicleEF	MHD	4.2290e-003	6.0860e-003
tblVehicleEF	MHD	0.05	8.4200e-003
tblVehicleEF	MHD	0.24	0.28
tblVehicleEF	MHD	0.32	0.56
tblVehicleEF	MHD	5.61	0.96
tblVehicleEF	MHD	164.29	72.29
tblVehicleEF	MHD	1,105.72	1,029.54
tblVehicleEF	MHD	53.92	8.32
tblVehicleEF	MHD	0.65	0.62
tblVehicleEF	MHD	1.01	2.09
tblVehicleEF	MHD	3.6900e-004	1.7050e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	3.5300e-004	1.6310e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.35	0.04
tblVehicleEF	MHD	1.5770e-003	6.8600e-004
tblVehicleEF	MHD	0.01	9.8100e-003

tblVehicleEF	MHD	6.3800e-004	8.2000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.38	0.05
tblVehicleEF	MHD	0.02	3.4660e-003
tblVehicleEF	MHD	4.1530e-003	6.0380e-003
tblVehicleEF	MHD	0.06	8.7320e-003
tblVehicleEF	MHD	0.46	0.42
tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	5.90	1.02
tblVehicleEF	MHD	142.41	69.34
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.40
tblVehicleEF	MHD	0.60	0.60
tblVehicleEF	MHD	1.06	2.18
tblVehicleEF	MHD	5.3200e-004	2.4540e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	5.0900e-004	2.3480e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02

tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	7.0500e-004	3.2200e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.13
tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.3710e-003	6.5800e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4300e-004	8.3000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	7.0500e-004	3.2200e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.13
tblVehicleEF	MHD	0.39	0.05
tblVehicleEF	OBUS	0.01	9.3650e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.27	0.49
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.67	2.81
tblVehicleEF	OBUS	70.21	68.33
tblVehicleEF	OBUS	1,126.32	1,507.23
tblVehicleEF	OBUS	71.08	22.19
tblVehicleEF	OBUS	0.32	0.39
tblVehicleEF	OBUS	1.10	1.47
tblVehicleEF	OBUS	1.1300e-004	1.5090e-003

tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.0800e-004	1.4440e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.41	0.13
tblVehicleEF	OBUS	6.8200e-004	6.5300e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2800e-004	2.2000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	OBUS	0.01	9.3930e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.26	0.47
tblVehicleEF	OBUS	0.75	1.22

tblVehicleEF	OBUS	6.11	2.57
tblVehicleEF	OBUS	73.34	68.71
tblVehicleEF	OBUS	1,126.32	1,507.28
tblVehicleEF	OBUS	71.08	21.80
tblVehicleEF	OBUS	0.33	0.39
tblVehicleEF	OBUS	1.02	1.35
tblVehicleEF	OBUS	9.5000e-005	1.2750e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	9.1000e-005	1.2200e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.05	0.09
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.39	0.13
tblVehicleEF	OBUS	7.1200e-004	6.5600e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.1800e-004	2.1600e-004
tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.07	0.11

tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.42	0.14
tblVehicleEF	OBUS	0.01	9.3640e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.28	0.51
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.62	2.79
tblVehicleEF	OBUS	65.88	67.80
tblVehicleEF	OBUS	1,126.32	1,507.24
tblVehicleEF	OBUS	71.08	22.15
tblVehicleEF	OBUS	0.31	0.39
tblVehicleEF	OBUS	1.08	1.44
tblVehicleEF	OBUS	1.3700e-004	1.8320e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.3100e-004	1.7520e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.41	0.13
tblVehicleEF	OBUS	6.4100e-004	6.4800e-004

tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2700e-004	2.1900e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3980e-003
tblVehicleEF	SBUS	0.07	3.9120e-003
tblVehicleEF	SBUS	5.64	1.82
tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.49	0.54
tblVehicleEF	SBUS	1,270.71	336.96
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.11
tblVehicleEF	SBUS	12.46	3.45
tblVehicleEF	SBUS	5.17	5.36
tblVehicleEF	SBUS	0.01	4.4720e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	4.2790e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03

tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004
tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.68	0.19
tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.28	0.02
tblVehicleEF	SBUS	0.01	3.2020e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004
tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.31	0.02
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.4900e-003
tblVehicleEF	SBUS	0.06	3.2450e-003
tblVehicleEF	SBUS	5.48	1.78
tblVehicleEF	SBUS	0.72	0.64
tblVehicleEF	SBUS	3.76	0.38
tblVehicleEF	SBUS	1,335.64	345.46
tblVehicleEF	SBUS	1,144.20	1,143.58
tblVehicleEF	SBUS	36.06	2.85

tblVehicleEF	SBUS	12.86	3.52
tblVehicleEF	SBUS	4.84	5.03
tblVehicleEF	SBUS	0.01	3.7780e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	3.6140e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003
tblVehicleEF	SBUS	0.67	0.19
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.23	0.02
tblVehicleEF	SBUS	0.01	3.2820e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.2700e-004	2.8000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003
tblVehicleEF	SBUS	0.96	0.27
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.25	0.02

tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3930e-003
tblVehicleEF	SBUS	0.07	4.0100e-003
tblVehicleEF	SBUS	5.85	1.87
tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.54	0.56
tblVehicleEF	SBUS	1,181.05	325.23
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.14
tblVehicleEF	SBUS	11.91	3.35
tblVehicleEF	SBUS	5.09	5.28
tblVehicleEF	SBUS	0.02	5.4310e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.02	5.1960e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003
tblVehicleEF	SBUS	0.68	0.19
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.29	0.02
tblVehicleEF	SBUS	0.01	3.0910e-003

tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003
tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.32	0.03
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.79	32.64
tblVehicleEF	UBUS	14.93	1.46
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.41
tblVehicleEF	UBUS	6.43	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004

tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.19	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.6230e-003	1.7200e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004
tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.30	0.08
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.08	0.02
tblVehicleEF	UBUS	9.90	32.64
tblVehicleEF	UBUS	12.23	1.20
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	16.98
tblVehicleEF	UBUS	5.98	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	0.02	3.2040e-003

tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	0.67	0.06
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.06	0.06
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.5760e-003	1.6800e-004
tblVehicleEF	UBUS	0.02	3.2040e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	2.69	4.28
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.16	0.07
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.80	32.64
tblVehicleEF	UBUS	14.43	1.42
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.36
tblVehicleEF	UBUS	6.31	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003

tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004
tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.17	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.6140e-003	1.7200e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004
tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.28	0.08
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00

tblVehicleTrips	CC_TTP	48.00	0.00
tblVehicleTrips	CC_TTP	74.40	0.00
tblVehicleTrips	CC_TTP	82.30	0.00
tblVehicleTrips	CC_TTP	79.00	0.00
tblVehicleTrips	CC_TTP	64.10	0.00
tblVehicleTrips	CC_TTP	72.50	0.00
tblVehicleTrips	CC_TTP	61.60	0.00
tblVehicleTrips	CC_TTP	69.00	0.00
tblVehicleTrips	CC_TTP	64.70	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	5.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00

tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TTP	33.00	0.00
tblVehicleTrips	CW_TTP	6.60	0.00
tblVehicleTrips	CW_TTP	12.70	0.00
tblVehicleTrips	CW_TTP	2.00	0.00
tblVehicleTrips	CW_TTP	16.90	0.00
tblVehicleTrips	CW_TTP	8.50	0.00
tblVehicleTrips	CW_TTP	19.40	0.00
tblVehicleTrips	CW_TTP	12.00	0.00
tblVehicleTrips	CW_TTP	16.30	0.00
tblVehicleTrips	DV_TP	51.00	0.00
tblVehicleTrips	DV_TP	26.00	0.00
tblVehicleTrips	DV_TP	58.00	0.00

tblVehicleTrips	DV_TP	27.00	0.00
tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	DV_TP	20.00	0.00
tblVehicleTrips	DV_TP	38.00	0.00
tblVehicleTrips	DV_TP	18.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	PB_TP	28.00	0.00
tblVehicleTrips	PB_TP	47.00	0.00
tblVehicleTrips	PB_TP	14.00	0.00
tblVehicleTrips	PB_TP	59.00	0.00
tblVehicleTrips	PB_TP	9.00	0.00
tblVehicleTrips	PB_TP	43.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	44.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	21.00	0.00
tblVehicleTrips	PR_TP	27.00	0.00
tblVehicleTrips	PR_TP	28.00	0.00
tblVehicleTrips	PR_TP	14.00	0.00
tblVehicleTrips	PR_TP	52.00	0.00
tblVehicleTrips	PR_TP	37.00	0.00
tblVehicleTrips	PR_TP	58.00	0.00
tblVehicleTrips	PR_TP	38.00	0.00
tblVehicleTrips	PR_TP	54.00	0.00
tblVehicleTrips	ST_TR	23.72	0.00
tblVehicleTrips	ST_TR	86.32	0.00
tblVehicleTrips	ST_TR	6.21	0.00

tblVehicleTrips	ST_TR	168.56	0.00
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	158.37	0.00
tblVehicleTrips	ST_TR	8.19	0.00
tblVehicleTrips	ST_TR	94.36	0.00
tblVehicleTrips	ST_TR	49.97	0.00
tblVehicleTrips	SU_TR	11.88	0.00
tblVehicleTrips	SU_TR	31.90	0.00
tblVehicleTrips	SU_TR	5.83	0.00
tblVehicleTrips	SU_TR	168.56	0.00
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	131.84	0.00
tblVehicleTrips	SU_TR	5.95	0.00
tblVehicleTrips	SU_TR	72.16	0.00
tblVehicleTrips	SU_TR	25.24	0.00
tblVehicleTrips	WD_TR	23.72	0.00
tblVehicleTrips	WD_TR	148.15	0.00
tblVehicleTrips	WD_TR	74.06	0.00
tblVehicleTrips	WD_TR	168.56	0.00
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	127.15	0.00
tblVehicleTrips	WD_TR	8.17	0.00
tblVehicleTrips	WD_TR	89.95	0.00
tblVehicleTrips	WD_TR	42.70	0.00
tblWater	IndoorWaterUseRate	338,691.99	0.00
tblWater	IndoorWaterUseRate	237,737.51	0.00
tblWater	IndoorWaterUseRate	428,466.78	0.00

tblWater	IndoorWaterUseRate	239,074.00	0.00
tblWater	IndoorWaterUseRate	2,247,439.47	0.00
tblWater	IndoorWaterUseRate	1,769,601.54	0.00
tblWater	IndoorWaterUseRate	3,424,513.95	0.00
tblWater	IndoorWaterUseRate	4,006,645.00	0.00
tblWater	IndoorWaterUseRate	3,777,698.60	0.00
tblWater	OutdoorWaterUseRate	207,585.41	0.00
tblWater	OutdoorWaterUseRate	145,710.09	0.00
tblWater	OutdoorWaterUseRate	1,101,771.72	0.00
tblWater	OutdoorWaterUseRate	146,529.23	0.00
tblWater	OutdoorWaterUseRate	1,377,462.90	0.00
tblWater	OutdoorWaterUseRate	112,953.29	0.00
tblWater	OutdoorWaterUseRate	380,501.55	0.00
tblWater	OutdoorWaterUseRate	255,743.30	0.00
tblWater	OutdoorWaterUseRate	2,315,363.66	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.3176	2.8908	2.3860	6.5300e-003	0.5434	0.1084	0.6517	0.1864	0.1009	0.2872	0.0000	591.7817	591.7817	0.0828	0.0000	593.8511
2021	1.1726	4.8058	4.7916	0.0150	0.7222	0.1481	0.8704	0.1949	0.1390	0.3339	0.0000	1,367.2301	1,367.2301	0.1356	0.0000	1,370.6206
Maximum	**1.1726**	**4.8058**	**4.7916**	**0.0150**	**0.7222**	**0.1481**	**0.8704**	**0.1949**	**0.1390**	**0.3339**	**0.0000**	**1,367.2301**	**1,367.2301**	**0.1356**	**0.0000**	**1,370.6206**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.2270	1.7434	2.4196	6.5300e-003	0.3674	0.0588	0.4262	0.1146	0.0554	0.1701	0.0000	591.7815	591.7815	0.0828	0.0000	593.8509
2021	1.1284	4.2176	4.8714	0.0150	0.7222	0.1239	0.8461	0.1949	0.1168	0.3117	0.0000	1,367.2296	1,367.2296	0.1356	0.0000	1,370.6202
Maximum	**1.1284**	**4.2176**	**4.8714**	**0.0150**	**0.7222**	**0.1239**	**0.8461**	**0.1949**	**0.1168**	**0.3117**	**0.0000**	**1,367.2296**	**1,367.2296**	**0.1356**	**0.0000**	**1,370.6202**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**9.05**	**22.55**	**-1.58**	**0.00**	**13.91**	**28.79**	**16.42**	**18.82**	**28.21**	**22.44**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	6-25-2020	9-24-2020	1.6500	0.6042
2	9-25-2020	12-24-2020	1.4337	1.2560
3	12-25-2020	3-24-2021	1.2989	1.1405
4	3-25-2021	6-24-2021	1.3196	1.1592
5	6-25-2021	9-24-2021	1.3198	1.1593
6	9-25-2021	9-30-2021	0.0861	0.0756
		Highest	1.6500	1.2560

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9693	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.9693**	**1.9000e-004**	**0.0203**	**0.0000**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.0393**	**0.0393**	**1.0000e-004**	**0.0000**	**0.0419**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9693	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.9693**	**1.9000e-004**	**0.0203**	**0.0000**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.0393**	**0.0393**	**1.0000e-004**	**0.0000**	**0.0419**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Bedford Marketplace (Construction Process - Mitigated) - San Bernardino-South Coast County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/25/2020	7/8/2020	5	10	
2	Grading	Grading	7/9/2020	8/26/2020	5	35	
3	Building Construction	Building Construction	8/27/2020	12/29/2021	5	350	
4	Paving	Paving	12/2/2021	12/29/2021	5	20	
5	Architectural Coating	Architectural Coating	12/2/2021	12/29/2021	5	20	

Acres of Grading (Site Preparation Phase): 35

Acres of Grading (Grading Phase): 140

Acres of Paving: 17.56

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 333,819; Non-Residential Outdoor: 111,273; Striped Parking Area: 45,891 (Architectural Coating – sqft)

OffRoad Equipment

Bedford Marketplace (Construction Process - Mitigated) - San Bernardino-South Coast County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	8.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	408.00	162.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	82.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1089	0.0000	0.1089	0.0517	0.0000	0.0517	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0204	0.2121	0.1076	1.9000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505
Total	**0.0204**	**0.2121**	**0.1076**	**1.9000e-004**	**0.1089**	**0.0110**	**0.1199**	**0.0517**	**0.0101**	**0.0618**	**0.0000**	**16.7153**	**16.7153**	**5.4100e-003**	**0.0000**	**16.8505**

3.2 Site Preparation - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.4000e-004	3.5000e-004	3.4900e-003	1.0000e-005	9.9000e-004	1.0000e-005	9.9000e-004	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.8458	0.8458	3.0000e-005	0.0000	0.8465
Total	**4.4000e-004**	**3.5000e-004**	**3.4900e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**9.9000e-004**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.8458**	**0.8458**	**3.0000e-005**	**0.0000**	**0.8465**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0425	0.0000	0.0425	0.0202	0.0000	0.0202	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.7600e-003	0.0489	0.1031	1.9000e-004		2.8700e-003	2.8700e-003		2.6600e-003	2.6600e-003	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505
Total	**5.7600e-003**	**0.0489**	**0.1031**	**1.9000e-004**	**0.0425**	**2.8700e-003**	**0.0453**	**0.0202**	**2.6600e-003**	**0.0228**	**0.0000**	**16.7153**	**16.7153**	**5.4100e-003**	**0.0000**	**16.8505**

3.2 Site Preparation - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.4000e-004	3.5000e-004	3.4900e-003	1.0000e-005	9.9000e-004	1.0000e-005	9.9000e-004	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.8458	0.8458	3.0000e-005	0.0000	0.8465
Total	**4.4000e-004**	**3.5000e-004**	**3.4900e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**9.9000e-004**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.8458**	**0.8458**	**3.0000e-005**	**0.0000**	**0.8465**

3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1796	0.0000	0.1796	0.0659	0.0000	0.0659	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0779	0.8785	0.5593	1.0900e-003		0.0380	0.0380		0.0350	0.0350	0.0000	95.3475	95.3475	0.0308	0.0000	96.1185
Total	**0.0779**	**0.8785**	**0.5593**	**1.0900e-003**	**0.1796**	**0.0380**	**0.2177**	**0.0659**	**0.0350**	**0.1009**	**0.0000**	**95.3475**	**95.3475**	**0.0308**	**0.0000**	**96.1185**

3.3 Grading - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7300e-003	1.3600e-003	0.0136	4.0000e-005	3.8400e-003	3.0000e-005	3.8600e-003	1.0200e-003	2.0000e-005	1.0400e-003	0.0000	3.2894	3.2894	1.0000e-004	0.0000	3.2918
Total	**1.7300e-003**	**1.3600e-003**	**0.0136**	**4.0000e-005**	**3.8400e-003**	**3.0000e-005**	**3.8600e-003**	**1.0200e-003**	**2.0000e-005**	**1.0400e-003**	**0.0000**	**3.2894**	**3.2894**	**1.0000e-004**	**0.0000**	**3.2918**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0701	0.0000	0.0701	0.0257	0.0000	0.0257	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0193	0.1257	0.5753	1.0900e-003		6.2600e-003	6.2600e-003		5.8900e-003	5.8900e-003	0.0000	95.3474	95.3474	0.0308	0.0000	96.1183
Total	**0.0193**	**0.1257**	**0.5753**	**1.0900e-003**	**0.0701**	**6.2600e-003**	**0.0763**	**0.0257**	**5.8900e-003**	**0.0316**	**0.0000**	**95.3474**	**95.3474**	**0.0308**	**0.0000**	**96.1183**

3.3 Grading - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7300e-003	1.3600e-003	0.0136	4.0000e-005	3.8400e-003	3.0000e-005	3.8600e-003	1.0200e-003	2.0000e-005	1.0400e-003	0.0000	3.2894	3.2894	1.0000e-004	0.0000	3.2918
Total	**1.7300e-003**	**1.3600e-003**	**0.0136**	**4.0000e-005**	**3.8400e-003**	**3.0000e-005**	**3.8600e-003**	**1.0200e-003**	**2.0000e-005**	**1.0400e-003**	**0.0000**	**3.2894**	**3.2894**	**1.0000e-004**	**0.0000**	**3.2918**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1026	0.9396	0.8175	1.3100e-003		0.0544	0.0544		0.0510	0.0510	0.0000	112.9212	112.9212	0.0282	0.0000	113.6249
Total	**0.1026**	**0.9396**	**0.8175**	**1.3100e-003**		**0.0544**	**0.0544**		**0.0510**	**0.0510**	**0.0000**	**112.9212**	**112.9212**	**0.0282**	**0.0000**	**113.6249**

3.4 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0229	0.7869	0.1646	1.9700e-003	0.0465	3.6000e-003	0.0501	0.0134	3.4400e-003	0.0169	0.0000	188.1942	188.1942	0.0130	0.0000	188.5198
Worker	0.0917	0.0721	0.7200	1.9300e-003	0.2036	1.3600e-003	0.2049	0.0541	1.2500e-003	0.0553	0.0000	174.4682	174.4682	5.2400e-003	0.0000	174.5992
Total	**0.1146**	**0.8590**	**0.8846**	**3.9000e-003**	**0.2500**	**4.9600e-003**	**0.2550**	**0.0675**	**4.6900e-003**	**0.0722**	**0.0000**	**362.6624**	**362.6624**	**0.0183**	**0.0000**	**363.1190**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0852	0.7082	0.8396	1.3100e-003		0.0447	0.0447		0.0422	0.0422	0.0000	112.9211	112.9211	0.0282	0.0000	113.6248
Total	**0.0852**	**0.7082**	**0.8396**	**1.3100e-003**		**0.0447**	**0.0447**		**0.0422**	**0.0422**	**0.0000**	**112.9211**	**112.9211**	**0.0282**	**0.0000**	**113.6248**

3.4 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0229	0.7869	0.1646	1.9700e-003	0.0465	3.6000e-003	0.0501	0.0134	3.4400e-003	0.0169	0.0000	188.1942	188.1942	0.0130	0.0000	188.5198
Worker	0.0917	0.0721	0.7200	1.9300e-003	0.2036	1.3600e-003	0.2049	0.0541	1.2500e-003	0.0553	0.0000	174.4682	174.4682	5.2400e-003	0.0000	174.5992
Total	**0.1146**	**0.8590**	**0.8846**	**3.9000e-003**	**0.2500**	**4.9600e-003**	**0.2550**	**0.0675**	**4.6900e-003**	**0.0722**	**0.0000**	**362.6624**	**362.6624**	**0.0183**	**0.0000**	**363.1190**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2620	2.4280	2.2884	3.7300e-003		0.1328	0.1328		0.1246	0.1246	0.0000	321.4316	321.4316	0.0793	0.0000	323.4144
Total	**0.2620**	**2.4280**	**2.2884**	**3.7300e-003**		**0.1328**	**0.1328**		**0.1246**	**0.1246**	**0.0000**	**321.4316**	**321.4316**	**0.0793**	**0.0000**	**323.4144**

3.4 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0556	2.0410	0.4153	5.5700e-003	0.1323	3.5100e-003	0.1358	0.0382	3.3600e-003	0.0415	0.0000	532.7896	532.7896	0.0359	0.0000	533.6870
Worker	0.2432	0.1838	1.8826	5.3200e-003	0.5793	3.7800e-003	0.5831	0.1539	3.4800e-003	0.1573	0.0000	480.7550	480.7550	0.0135	0.0000	481.0914
Total	**0.2988**	**2.2248**	**2.2979**	**0.0109**	**0.7116**	**7.2900e-003**	**0.7189**	**0.1920**	**6.8400e-003**	**0.1989**	**0.0000**	**1,013.5446**	**1,013.5446**	**0.0494**	**0.0000**	**1,014.7784**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2177	1.8398	2.3682	3.7300e-003		0.1085	0.1085		0.1024	0.1024	0.0000	321.4312	321.4312	0.0793	0.0000	323.4140
Total	**0.2177**	**1.8398**	**2.3682**	**3.7300e-003**		**0.1085**	**0.1085**		**0.1024**	**0.1024**	**0.0000**	**321.4312**	**321.4312**	**0.0793**	**0.0000**	**323.4140**

3.4 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0556	2.0410	0.4153	5.5700e-003	0.1323	3.5100e-003	0.1358	0.0382	3.3600e-003	0.0415	0.0000	532.7896	532.7896	0.0359	0.0000	533.6870
Worker	0.2432	0.1838	1.8826	5.3200e-003	0.5793	3.7800e-003	0.5831	0.1539	3.4800e-003	0.1573	0.0000	480.7550	480.7550	0.0135	0.0000	481.0914
Total	**0.2988**	**2.2248**	**2.2979**	**0.0109**	**0.7116**	**7.2900e-003**	**0.7189**	**0.1920**	**6.8400e-003**	**0.1989**	**0.0000**	**1,013.5446**	**1,013.5446**	**0.0494**	**0.0000**	**1,014.7784**

3.5 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0126	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854
Paving	0.0230					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0356**	**0.1292**	**0.1465**	**2.3000e-004**		**6.7800e-003**	**6.7800e-003**		**6.2400e-003**	**6.2400e-003**	**0.0000**	**20.0235**	**20.0235**	**6.4800e-003**	**0.0000**	**20.1854**

3.5 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.9000e-004	5.2000e-004	5.3400e-003	2.0000e-005	1.6400e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.3649	1.3649	4.0000e-005	0.0000	1.3658
Total	**6.9000e-004**	**5.2000e-004**	**5.3400e-003**	**2.0000e-005**	**1.6400e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.3649**	**1.3649**	**4.0000e-005**	**0.0000**	**1.3658**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0126	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854
Paving	0.0230					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0356**	**0.1292**	**0.1465**	**2.3000e-004**		**6.7800e-003**	**6.7800e-003**		**6.2400e-003**	**6.2400e-003**	**0.0000**	**20.0235**	**20.0235**	**6.4800e-003**	**0.0000**	**20.1854**

3.5 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.9000e-004	5.2000e-004	5.3400e-003	2.0000e-005	1.6400e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.3649	1.3649	4.0000e-005	0.0000	1.3658
Total	**6.9000e-004**	**5.2000e-004**	**5.3400e-003**	**2.0000e-005**	**1.6400e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.3649**	**1.3649**	**4.0000e-005**	**0.0000**	**1.3658**

3.6 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5689					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9200e-003	0.0204	0.0242	4.0000e-005		1.2500e-003	1.2500e-003		1.2500e-003	1.2500e-003	0.0000	3.4043	3.4043	2.3000e-004	0.0000	3.4102
Total	**0.5719**	**0.0204**	**0.0242**	**4.0000e-005**		**1.2500e-003**	**1.2500e-003**		**1.2500e-003**	**1.2500e-003**	**0.0000**	**3.4043**	**3.4043**	**2.3000e-004**	**0.0000**	**3.4102**

3.6 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7700e-003	2.8500e-003	0.0292	8.0000e-005	8.9900e-003	6.0000e-005	9.0500e-003	2.3900e-003	5.0000e-005	2.4400e-003	0.0000	7.4612	7.4612	2.1000e-004	0.0000	7.4664
Total	**3.7700e-003**	**2.8500e-003**	**0.0292**	**8.0000e-005**	**8.9900e-003**	**6.0000e-005**	**9.0500e-003**	**2.3900e-003**	**5.0000e-005**	**2.4400e-003**	**0.0000**	**7.4612**	**7.4612**	**2.1000e-004**	**0.0000**	**7.4664**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5689					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9200e-003	0.0204	0.0242	4.0000e-005		1.2500e-003	1.2500e-003		1.2500e-003	1.2500e-003	0.0000	3.4043	3.4043	2.3000e-004	0.0000	3.4102
Total	**0.5719**	**0.0204**	**0.0242**	**4.0000e-005**		**1.2500e-003**	**1.2500e-003**		**1.2500e-003**	**1.2500e-003**	**0.0000**	**3.4043**	**3.4043**	**2.3000e-004**	**0.0000**	**3.4102**

3.6 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7700e-003	2.8500e-003	0.0292	8.0000e-005	8.9900e-003	6.0000e-005	9.0500e-003	2.3900e-003	5.0000e-005	2.4400e-003	0.0000	7.4612	7.4612	2.1000e-004	0.0000	7.4664
Total	**3.7700e-003**	**2.8500e-003**	**0.0292**	**8.0000e-005**	**8.9900e-003**	**6.0000e-005**	**9.0500e-003**	**2.3900e-003**	**5.0000e-005**	**2.4400e-003**	**0.0000**	**7.4612**	**7.4612**	**2.1000e-004**	**0.0000**	**7.4664**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	0.00	0.00	0.00		
Bank (with Drive-Through)	0.00	0.00	0.00		
Day-Care Center	0.00	0.00	0.00		
Gasoline/Service Station	0.00	0.00	0.00		
Health Club	0.00	0.00	0.00		
High Turnover (Sit Down Restaurant)	0.00	0.00	0.00		
Hotel	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Quality Restaurant	0.00	0.00	0.00		
Regional Shopping Center	0.00	0.00	0.00		
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Bank (with Drive-Through)	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Day-Care Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Gasoline/Service Station	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Health Club	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
High Turnover (Sit Down	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Hotel	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Quality Restaurant	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
User Defined Recreational	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Bank (with Drive-Through)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Day-Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Gasoline/Service Station	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Health Club	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
High Turnover (Sit Down Restaurant)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Hotel	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Other Asphalt Surfaces	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Parking Lot	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Quality Restaurant	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Regional Shopping Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
User Defined Recreational	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.9693	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419
Unmitigated	0.9693	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1138					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8536					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.8900e-003	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419
Total	**0.9693**	**1.9000e-004**	**0.0203**	**0.0000**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.0393**	**0.0393**	**1.0000e-004**	**0.0000**	**0.0419**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1138					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8536					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.8900e-003	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419
Total	**0.9693**	**1.9000e-004**	**0.0203**	**0.0000**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.0393**	**0.0393**	**1.0000e-004**	**0.0000**	**0.0419**

7.0 Water Detail

7.1 Mitigation Measures Water

Bedford Marketplace (Construction Process - Mitigated) - San Bernardino-South Coast County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	0 / 0	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0 / 0	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0 / 0	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	0 / 0	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0 / 0	0.0000	0.0000	0.0000	0.0000
Hotel	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0 / 0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	0 / 0	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0 / 0	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0 / 0	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	0 / 0	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0 / 0	0.0000	0.0000	0.0000	0.0000
Hotel	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0 / 0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Bedford Marketplace (Operations)

San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Bank (with Drive-Through)	6.00	1000sqft	0.14	6,000.00	0
Day-Care Center	9.99	1000sqft	0.23	9,990.00	0
Other Asphalt Surfaces	408.85	1000sqft	9.39	408,852.00	0
Parking Lot	890.00	Space	8.17	356,000.00	0
Health Club	38.00	1000sqft	0.87	38,000.00	0
High Turnover (Sit Down Restaurant)	5.83	1000sqft	0.13	5,826.00	0
Hotel	135.00	Room	0.57	88,730.00	0
Quality Restaurant	13.20	1000sqft	0.30	13,200.00	0
User Defined Recreational	2.20	User Defined Unit	0.05	2,200.00	0
Automobile Care Center	3.60	1000sqft	0.08	3,600.00	0
Gasoline/Service Station	18.00	Pump	0.09	4,000.00	0
Regional Shopping Center	51.00	1000sqft	1.17	51,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Net Land Area per the Site Plan is +/-21.2 acres.

Construction Phase - Operations Run Only.

Off-road Equipment - Hours are based on an 8-hour workday.

Off-road Equipment - Operations Run Only.

Trips and VMT - Operations Run Only.

Grading -

Architectural Coating - Rule 1113

Vehicle Trips - Trip Rates based on information provided in the TIA.

Energy Use - Energy rates for User Defined Recreational (Coffee/Shop use) reflect the CalEEMod default rates for Fast-Food Restaurant with Drive Thru.

Water And Wastewater - Water rates adjusted to assume that half of the trips to the car wash will use approximately 30 gallons of water

Solid Waste -

Construction Off-road Equipment Mitigation -

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	3.03	2.12
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	6.62	4.63
tblEnergyUse	LightingElect	5.44	3.81

Bedford Marketplace (Operations) - San Bernardino-South Coast County, Annual

tblEnergyUse	LightingElect	6.62	4.63
tblEnergyUse	LightingElect	5.61	3.93
tblEnergyUse	LightingElect	0.00	4.63
tblEnergyUse	NT24E	0.00	28.48
tblEnergyUse	NT24NG	0.00	195.77
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	2.78	1.95
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	12.38	8.67
tblEnergyUse	T24E	6.47	4.53
tblEnergyUse	T24E	12.38	8.67
tblEnergyUse	T24E	4.58	3.21
tblEnergyUse	T24E	0.00	8.67
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	6.97	4.88
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	77.67	54.37
tblEnergyUse	T24NG	55.15	38.61
tblEnergyUse	T24NG	77.67	54.37
tblEnergyUse	T24NG	1.92	1.34
tblEnergyUse	T24NG	0.00	54.37
tblLandUse	LandUseSquareFeet	408,850.00	408,852.00
tblLandUse	LandUseSquareFeet	5,830.00	5,826.00

Bedford Marketplace (Operations) - San Bernardino-South Coast County, Annual

tblLandUse	LandUseSquareFeet	196,020.00	88,730.00
tblLandUse	LandUseSquareFeet	0.00	2,200.00
tblLandUse	LandUseSquareFeet	2,541.15	4,000.00
tblLandUse	LotAcreage	8.01	8.17
tblLandUse	LotAcreage	4.50	0.57
tblLandUse	LotAcreage	0.00	0.05
tblLandUse	LotAcreage	0.06	0.09
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblVehicleEF	HHD	1.24	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	3.46	7.82
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.92	2.4420e-003
tblVehicleEF	HHD	6,983.95	1,459.93
tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.07	7.65
tblVehicleEF	HHD	2.87	3.24
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03

tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004
tblVehicleEF	HHD	0.89	0.60
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	2.4200e-004	6.3700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004
tblVehicleEF	HHD	1.02	0.68
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4200e-004	6.3700e-004
tblVehicleEF	HHD	0.07	1.0000e-006
tblVehicleEF	HHD	1.17	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	2.52	7.65
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.80	2.2950e-003
tblVehicleEF	HHD	7,395.94	1,453.32

tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.97	7.40
tblVehicleEF	HHD	2.70	3.05
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	1.8400e-004	9.0000e-006
tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.84	0.62
tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.7000e-005	0.00
tblVehicleEF	HHD	1.8400e-004	9.0000e-006
tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.97	0.71

tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	1.34	0.03
tblVehicleEF	HHD	0.04	3.7740e-003
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	4.76	7.98
tblVehicleEF	HHD	0.58	0.36
tblVehicleEF	HHD	1.89	2.4140e-003
tblVehicleEF	HHD	6,415.00	1,454.79
tblVehicleEF	HHD	1,493.95	1,371.01
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	26.84	7.90
tblVehicleEF	HHD	2.83	3.15
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.8160e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004

tblVehicleEF	HHD	0.96	0.56
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.08
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.06	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004
tblVehicleEF	HHD	1.10	0.64
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.09
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.07	1.0000e-006
tblVehicleEF	LDA	4.6640e-003	2.7950e-003
tblVehicleEF	LDA	6.4640e-003	0.06
tblVehicleEF	LDA	0.62	0.70
tblVehicleEF	LDA	1.32	2.22
tblVehicleEF	LDA	261.85	269.33
tblVehicleEF	LDA	59.28	55.48
tblVehicleEF	LDA	0.06	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07

tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.6230e-003	2.6640e-003
tblVehicleEF	LDA	6.1500e-004	5.4900e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.10	0.27
tblVehicleEF	LDA	5.3170e-003	3.2030e-003
tblVehicleEF	LDA	5.3900e-003	0.05
tblVehicleEF	LDA	0.76	0.86
tblVehicleEF	LDA	1.10	1.85
tblVehicleEF	LDA	286.52	294.16
tblVehicleEF	LDA	59.28	54.75
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11

tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.07	0.21
tblVehicleEF	LDA	2.8710e-003	2.9100e-003
tblVehicleEF	LDA	6.1100e-004	5.4200e-004
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.08	0.23
tblVehicleEF	LDA	4.5320e-003	2.7260e-003
tblVehicleEF	LDA	6.4200e-003	0.06
tblVehicleEF	LDA	0.58	0.67
tblVehicleEF	LDA	1.30	2.19
tblVehicleEF	LDA	256.02	263.51
tblVehicleEF	LDA	59.28	55.41
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.25

tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.5640e-003	2.6070e-003
tblVehicleEF	LDA	6.1500e-004	5.4800e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.25
tblVehicleEF	LDA	0.09	0.27
tblVehicleEF	LDT1	0.02	8.1890e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.71	1.63
tblVehicleEF	LDT1	4.02	2.54
tblVehicleEF	LDT1	323.73	319.09
tblVehicleEF	LDT1	72.77	67.44
tblVehicleEF	LDT1	0.18	0.15
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.29	0.48
tblVehicleEF	LDT1	3.2600e-003	3.1580e-003

tblVehicleEF	LDT1	7.9900e-004	6.6700e-004
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.06	0.05
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT1	0.02	9.2860e-003
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	2.05	1.97
tblVehicleEF	LDT1	3.30	2.10
tblVehicleEF	LDT1	352.65	345.09
tblVehicleEF	LDT1	72.77	66.47
tblVehicleEF	LDT1	0.16	0.13
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.40	0.44
tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.24	0.41
tblVehicleEF	LDT1	3.5540e-003	3.4150e-003
tblVehicleEF	LDT1	7.8600e-004	6.5800e-004
tblVehicleEF	LDT1	0.40	0.44

tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.06	0.06
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.26	0.44
tblVehicleEF	LDT1	0.01	7.9980e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.62	1.55
tblVehicleEF	LDT1	3.95	2.49
tblVehicleEF	LDT1	316.91	312.93
tblVehicleEF	LDT1	72.77	67.36
tblVehicleEF	LDT1	0.17	0.14
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.28	0.48
tblVehicleEF	LDT1	3.1900e-003	3.0970e-003
tblVehicleEF	LDT1	7.9800e-004	6.6700e-004
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13

tblVehicleEF	LDT1	0.05	0.05
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT2	6.9330e-003	4.8260e-003
tblVehicleEF	LDT2	9.2890e-003	0.08
tblVehicleEF	LDT2	0.85	1.06
tblVehicleEF	LDT2	1.85	2.89
tblVehicleEF	LDT2	363.70	344.02
tblVehicleEF	LDT2	81.97	72.94
tblVehicleEF	LDT2	0.10	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.13	0.38
tblVehicleEF	LDT2	3.6440e-003	3.4040e-003
tblVehicleEF	LDT2	8.5100e-004	7.2200e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50

tblVehicleEF	LDT2	0.14	0.42
tblVehicleEF	LDT2	7.8730e-003	5.5090e-003
tblVehicleEF	LDT2	7.7350e-003	0.07
tblVehicleEF	LDT2	1.04	1.30
tblVehicleEF	LDT2	1.53	2.39
tblVehicleEF	LDT2	397.09	369.57
tblVehicleEF	LDT2	81.97	71.94
tblVehicleEF	LDT2	0.09	0.09
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	3.9810e-003	3.6570e-003
tblVehicleEF	LDT2	8.4600e-004	7.1200e-004
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.11	0.35
tblVehicleEF	LDT2	6.7430e-003	4.7100e-003

tblVehicleEF	LDT2	9.2200e-003	0.08
tblVehicleEF	LDT2	0.81	1.01
tblVehicleEF	LDT2	1.82	2.84
tblVehicleEF	LDT2	355.82	337.97
tblVehicleEF	LDT2	81.97	72.85
tblVehicleEF	LDT2	0.09	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.58
tblVehicleEF	LDT2	0.12	0.38
tblVehicleEF	LDT2	3.5650e-003	3.3440e-003
tblVehicleEF	LDT2	8.5100e-004	7.2100e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.08	0.58
tblVehicleEF	LDT2	0.14	0.41
tblVehicleEF	LHD1	5.4860e-003	4.9840e-003
tblVehicleEF	LHD1	0.01	7.1410e-003
tblVehicleEF	LHD1	0.02	0.02

tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.77	1.07
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.99
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.26	1.69
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.29	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6200e-004	1.0900e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003

tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD1	5.4860e-003	5.0000e-003
tblVehicleEF	LHD1	0.01	7.3180e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.18	0.99
tblVehicleEF	LHD1	2.58	1.00
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.98
tblVehicleEF	LHD1	30.92	10.87
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.12	1.58
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11

tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.27	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0370e-003	6.3960e-003
tblVehicleEF	LHD1	3.5800e-004	1.0800e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.30	0.09
tblVehicleEF	LHD1	5.4860e-003	4.9870e-003
tblVehicleEF	LHD1	0.01	7.1590e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.72	1.05
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.96
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.22	1.66
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004

tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6100e-004	1.0800e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD2	3.8190e-003	3.4060e-003
tblVehicleEF	LHD2	5.2410e-003	4.5240e-003
tblVehicleEF	LHD2	9.1660e-003	0.01

tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.29	0.64
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.51
tblVehicleEF	LHD2	24.89	7.96
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.69	1.81
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7300e-004	7.9000e-005
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05

tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.14	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4160e-003
tblVehicleEF	LHD2	5.3190e-003	4.5750e-003
tblVehicleEF	LHD2	8.7380e-003	9.6870e-003
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.56	0.62
tblVehicleEF	LHD2	1.21	0.60
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.89
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.59	1.70
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02

tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7100e-004	7.8000e-005
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4070e-003
tblVehicleEF	LHD2	5.2490e-003	4.5300e-003
tblVehicleEF	LHD2	9.0820e-003	0.01
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.27	0.63
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.94
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.67	1.78
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01

tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7200e-004	7.9000e-005
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.16	0.25
tblVehicleEF	MCY	21.02	21.16
tblVehicleEF	MCY	9.91	8.77
tblVehicleEF	MCY	167.12	211.16
tblVehicleEF	MCY	46.87	61.87

tblVehicleEF	MCY	1.17	1.17
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84
tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.26	2.26
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.17	1.92
tblVehicleEF	MCY	2.0790e-003	2.0900e-003
tblVehicleEF	MCY	6.9500e-004	6.1200e-004
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84
tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.76	2.76
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.37	2.08
tblVehicleEF	MCY	0.41	0.32
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	21.14	21.29
tblVehicleEF	MCY	9.06	7.97
tblVehicleEF	MCY	167.12	211.14
tblVehicleEF	MCY	46.87	59.68
tblVehicleEF	MCY	0.99	0.99
tblVehicleEF	MCY	1.8190e-003	1.7890e-003

tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.19	2.19
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	1.87	1.64
tblVehicleEF	MCY	2.0790e-003	2.0890e-003
tblVehicleEF	MCY	6.7100e-004	5.9100e-004
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.69	2.68
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.03	1.78
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	20.06	20.18
tblVehicleEF	MCY	9.53	8.41
tblVehicleEF	MCY	167.12	209.47
tblVehicleEF	MCY	46.87	61.06
tblVehicleEF	MCY	1.13	1.13
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003

tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.22	2.22
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.10	1.84
tblVehicleEF	MCY	2.0630e-003	2.0730e-003
tblVehicleEF	MCY	6.8600e-004	6.0400e-004
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.71	2.71
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.28	2.00
tblVehicleEF	MDV	0.01	6.6050e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.55	1.33
tblVehicleEF	MDV	3.59	3.53
tblVehicleEF	MDV	498.66	425.70
tblVehicleEF	MDV	110.76	90.07
tblVehicleEF	MDV	0.20	0.14
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12

tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.28	0.50
tblVehicleEF	MDV	5.0000e-003	4.2090e-003
tblVehicleEF	MDV	1.1710e-003	8.9100e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MDV	0.02	7.4780e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.87	1.60
tblVehicleEF	MDV	2.99	2.92
tblVehicleEF	MDV	542.90	452.84
tblVehicleEF	MDV	110.76	88.84
tblVehicleEF	MDV	0.18	0.12
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22

tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.24	0.42
tblVehicleEF	MDV	5.4470e-003	4.4780e-003
tblVehicleEF	MDV	1.1600e-003	8.7900e-004
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22
tblVehicleEF	MDV	0.06	0.05
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.26	0.46
tblVehicleEF	MDV	0.01	6.4310e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.47	1.25
tblVehicleEF	MDV	3.53	3.47
tblVehicleEF	MDV	488.33	419.25
tblVehicleEF	MDV	110.76	89.97
tblVehicleEF	MDV	0.19	0.13
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.13	0.61

tblVehicleEF	MDV	0.28	0.49
tblVehicleEF	MDV	4.8960e-003	4.1450e-003
tblVehicleEF	MDV	1.1700e-003	8.9000e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.13	0.61
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.60	0.37
tblVehicleEF	MH	6.96	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.64	4.70
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00

tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.2000e-004	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.44	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.74	0.37
tblVehicleEF	MH	6.31	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.50	4.42
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00

tblVehicleEF	MH	0.37	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.0900e-004	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.41	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.61	0.37
tblVehicleEF	MH	6.87	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.61	4.62
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00

tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.1900e-004	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.43	0.00
tblVehicleEF	MHD	0.02	3.2250e-003
tblVehicleEF	MHD	4.1450e-003	6.0340e-003
tblVehicleEF	MHD	0.06	8.8310e-003
tblVehicleEF	MHD	0.33	0.34
tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	6.00	1.03
tblVehicleEF	MHD	155.10	71.06
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.43
tblVehicleEF	MHD	0.63	0.61
tblVehicleEF	MHD	1.08	2.22
tblVehicleEF	MHD	4.3700e-004	2.0190e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	4.1800e-004	1.9320e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004

tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.11
tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.4910e-003	6.7400e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4400e-004	8.3000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.11
tblVehicleEF	MHD	0.40	0.05
tblVehicleEF	MHD	0.02	3.0610e-003
tblVehicleEF	MHD	4.2290e-003	6.0860e-003
tblVehicleEF	MHD	0.05	8.4200e-003
tblVehicleEF	MHD	0.24	0.28
tblVehicleEF	MHD	0.32	0.56
tblVehicleEF	MHD	5.61	0.96
tblVehicleEF	MHD	164.29	72.29
tblVehicleEF	MHD	1,105.72	1,029.54
tblVehicleEF	MHD	53.92	8.32
tblVehicleEF	MHD	0.65	0.62
tblVehicleEF	MHD	1.01	2.09

tblVehicleEF	MHD	3.6900e-004	1.7050e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	3.5300e-004	1.6310e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.35	0.04
tblVehicleEF	MHD	1.5770e-003	6.8600e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.3800e-004	8.2000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.38	0.05
tblVehicleEF	MHD	0.02	3.4660e-003
tblVehicleEF	MHD	4.1530e-003	6.0380e-003
tblVehicleEF	MHD	0.06	8.7320e-003
tblVehicleEF	MHD	0.46	0.42

tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	5.90	1.02
tblVehicleEF	MHD	142.41	69.34
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.40
tblVehicleEF	MHD	0.60	0.60
tblVehicleEF	MHD	1.06	2.18
tblVehicleEF	MHD	5.3200e-004	2.4540e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	5.0900e-004	2.3480e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	7.0500e-004	3.2200e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.13
tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.3710e-003	6.5800e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4300e-004	8.3000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	7.0500e-004	3.2200e-004

tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.13
tblVehicleEF	MHD	0.39	0.05
tblVehicleEF	OBUS	0.01	9.3650e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.27	0.49
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.67	2.81
tblVehicleEF	OBUS	70.21	68.33
tblVehicleEF	OBUS	1,126.32	1,507.23
tblVehicleEF	OBUS	71.08	22.19
tblVehicleEF	OBUS	0.32	0.39
tblVehicleEF	OBUS	1.10	1.47
tblVehicleEF	OBUS	1.1300e-004	1.5090e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.0800e-004	1.4440e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.41	0.13

tblVehicleEF	OBUS	6.8200e-004	6.5300e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2800e-004	2.2000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	OBUS	0.01	9.3930e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.26	0.47
tblVehicleEF	OBUS	0.75	1.22
tblVehicleEF	OBUS	6.11	2.57
tblVehicleEF	OBUS	73.34	68.71
tblVehicleEF	OBUS	1,126.32	1,507.28
tblVehicleEF	OBUS	71.08	21.80
tblVehicleEF	OBUS	0.33	0.39
tblVehicleEF	OBUS	1.02	1.35
tblVehicleEF	OBUS	9.5000e-005	1.2750e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	9.1000e-005	1.2200e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004

tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.05	0.09
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.39	0.13
tblVehicleEF	OBUS	7.1200e-004	6.5600e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.1800e-004	2.1600e-004
tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.07	0.11
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.42	0.14
tblVehicleEF	OBUS	0.01	9.3640e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.28	0.51
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.62	2.79
tblVehicleEF	OBUS	65.88	67.80
tblVehicleEF	OBUS	1,126.32	1,507.24
tblVehicleEF	OBUS	71.08	22.15
tblVehicleEF	OBUS	0.31	0.39

tblVehicleEF	OBUS	1.08	1.44
tblVehicleEF	OBUS	1.3700e-004	1.8320e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.3100e-004	1.7520e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.41	0.13
tblVehicleEF	OBUS	6.4100e-004	6.4800e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2700e-004	2.1900e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3980e-003
tblVehicleEF	SBUS	0.07	3.9120e-003

tblVehicleEF	SBUS	5.64	1.82
tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.49	0.54
tblVehicleEF	SBUS	1,270.71	336.96
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.11
tblVehicleEF	SBUS	12.46	3.45
tblVehicleEF	SBUS	5.17	5.36
tblVehicleEF	SBUS	0.01	4.4720e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	4.2790e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004
tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.68	0.19
tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.28	0.02
tblVehicleEF	SBUS	0.01	3.2020e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004

tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.31	0.02
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.4900e-003
tblVehicleEF	SBUS	0.06	3.2450e-003
tblVehicleEF	SBUS	5.48	1.78
tblVehicleEF	SBUS	0.72	0.64
tblVehicleEF	SBUS	3.76	0.38
tblVehicleEF	SBUS	1,335.64	345.46
tblVehicleEF	SBUS	1,144.20	1,143.58
tblVehicleEF	SBUS	36.06	2.85
tblVehicleEF	SBUS	12.86	3.52
tblVehicleEF	SBUS	4.84	5.03
tblVehicleEF	SBUS	0.01	3.7780e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	3.6140e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003

tblVehicleEF	SBUS	0.67	0.19
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.23	0.02
tblVehicleEF	SBUS	0.01	3.2820e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.2700e-004	2.8000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003
tblVehicleEF	SBUS	0.96	0.27
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.25	0.02
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3930e-003
tblVehicleEF	SBUS	0.07	4.0100e-003
tblVehicleEF	SBUS	5.85	1.87
tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.54	0.56
tblVehicleEF	SBUS	1,181.05	325.23
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.14
tblVehicleEF	SBUS	11.91	3.35
tblVehicleEF	SBUS	5.09	5.28
tblVehicleEF	SBUS	0.02	5.4310e-003

tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.02	5.1960e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003
tblVehicleEF	SBUS	0.68	0.19
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.29	0.02
tblVehicleEF	SBUS	0.01	3.0910e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003
tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.32	0.03
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.79	32.64

tblVehicleEF	UBUS	14.93	1.46
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.41
tblVehicleEF	UBUS	6.43	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004
tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.19	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.6230e-003	1.7200e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004
tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.30	0.08
tblVehicleEF	UBUS	1.95	4.19

tblVehicleEF	UBUS	0.08	0.02
tblVehicleEF	UBUS	9.90	32.64
tblVehicleEF	UBUS	12.23	1.20
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	16.98
tblVehicleEF	UBUS	5.98	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	0.02	3.2040e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	0.67	0.06
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.06	0.06
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.5760e-003	1.6800e-004
tblVehicleEF	UBUS	0.02	3.2040e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	2.69	4.28
tblVehicleEF	UBUS	0.02	0.05

tblVehicleEF	UBUS	1.16	0.07
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.80	32.64
tblVehicleEF	UBUS	14.43	1.42
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.36
tblVehicleEF	UBUS	6.31	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004
tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.17	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.6140e-003	1.7200e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004

tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.28	0.08
tblVehicleTrips	CC_TTP	0.00	79.50
tblVehicleTrips	CNW_TTP	0.00	19.00
tblVehicleTrips	CW_TTP	0.00	1.50
tblVehicleTrips	DV_TP	51.00	0.00
tblVehicleTrips	DV_TP	26.00	0.00
tblVehicleTrips	DV_TP	58.00	0.00
tblVehicleTrips	DV_TP	27.00	0.00
tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	DV_TP	20.00	0.00
tblVehicleTrips	DV_TP	18.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	PB_TP	28.00	86.00
tblVehicleTrips	PB_TP	47.00	65.00
tblVehicleTrips	PB_TP	14.00	58.00
tblVehicleTrips	PB_TP	59.00	85.00
tblVehicleTrips	PB_TP	9.00	45.00
tblVehicleTrips	PB_TP	43.00	88.00
tblVehicleTrips	PB_TP	44.00	73.00
tblVehicleTrips	PB_TP	11.00	63.00
tblVehicleTrips	PB_TP	0.00	54.00
tblVehicleTrips	PR_TP	21.00	14.00
tblVehicleTrips	PR_TP	27.00	35.00
tblVehicleTrips	PR_TP	28.00	42.00
tblVehicleTrips	PR_TP	14.00	15.00

tblVehicleTrips	PR_TP	52.00	55.00
tblVehicleTrips	PR_TP	37.00	12.00
tblVehicleTrips	PR_TP	38.00	27.00
tblVehicleTrips	PR_TP	54.00	37.00
tblVehicleTrips	PR_TP	0.00	46.00
tblVehicleTrips	ST_TR	23.72	304.00
tblVehicleTrips	ST_TR	6.21	6.22
tblVehicleTrips	ST_TR	168.56	182.17
tblVehicleTrips	ST_TR	158.37	122.40
tblVehicleTrips	ST_TR	8.19	10.50
tblVehicleTrips	ST_TR	94.36	90.04
tblVehicleTrips	ST_TR	49.97	46.12
tblVehicleTrips	ST_TR	0.00	87.70
tblVehicleTrips	SU_TR	11.88	410.00
tblVehicleTrips	SU_TR	5.83	5.84
tblVehicleTrips	SU_TR	168.56	166.88
tblVehicleTrips	SU_TR	131.84	142.64
tblVehicleTrips	SU_TR	5.95	8.48
tblVehicleTrips	SU_TR	72.16	71.97
tblVehicleTrips	SU_TR	25.24	21.10
tblVehicleTrips	SU_TR	0.00	87.70
tblVehicleTrips	WD_TR	23.72	142.00
tblVehicleTrips	WD_TR	148.15	79.67
tblVehicleTrips	WD_TR	74.06	47.62
tblVehicleTrips	WD_TR	168.56	172.01
tblVehicleTrips	WD_TR	32.93	30.00
tblVehicleTrips	WD_TR	127.15	112.18

tblVehicleTrips	WD_TR	8.17	12.23
tblVehicleTrips	WD_TR	89.95	83.84
tblVehicleTrips	WD_TR	42.70	37.75
tblVehicleTrips	WD_TR	0.00	820.38
tblWater	IndoorWaterUseRate	338,691.99	3,136,416.99
tblWater	IndoorWaterUseRate	0.00	667,774.17
tblWater	OutdoorWaterUseRate	0.00	42,623.88

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Bedford Marketplace (Operations) - San Bernardino-South Coast County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9693	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419
Energy	0.0580	0.5272	0.4429	3.1600e-003		0.0401	0.0401		0.0401	0.0401	0.0000	1,623.0505	1,623.0505	0.0543	0.0195	1,630.2143
Mobile	5.3013	16.3549	30.4072	0.0682	5.4290	0.1131	5.5421	1.4533	0.1070	1.5603	0.0000	6,411.6584	6,411.6584	0.5217	0.0000	6,424.7018
Waste						0.0000	0.0000		0.0000	0.0000	94.9023	0.0000	94.9023	5.6086	0.0000	235.1165
Water						0.0000	0.0000		0.0000	0.0000	6.3246	104.2519	110.5764	0.6539	0.0162	131.7601
Total	**6.3286**	**16.8823**	**30.8703**	**0.0713**	**5.4290**	**0.1532**	**5.5822**	**1.4533**	**0.1472**	**1.6005**	**101.2269**	**8,138.9999**	**8,240.2268**	**6.8386**	**0.0357**	**8,421.8346**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9693	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419
Energy	0.0580	0.5272	0.4429	3.1600e-003		0.0401	0.0401		0.0401	0.0401	0.0000	1,623.0505	1,623.0505	0.0543	0.0195	1,630.2143
Mobile	5.3013	16.3549	30.4072	0.0682	5.4290	0.1131	5.5421	1.4533	0.1070	1.5603	0.0000	6,411.6584	6,411.6584	0.5217	0.0000	6,424.7018
Waste						0.0000	0.0000		0.0000	0.0000	94.9023	0.0000	94.9023	5.6086	0.0000	235.1165
Water						0.0000	0.0000		0.0000	0.0000	6.3246	104.2519	110.5764	0.6539	0.0162	131.7601
Total	**6.3286**	**16.8823**	**30.8703**	**0.0713**	**5.4290**	**0.1532**	**5.5822**	**1.4533**	**0.1472**	**1.6005**	**101.2269**	**8,138.9999**	**8,240.2268**	**6.8386**	**0.0357**	**8,421.8346**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/25/2020	6/25/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 17.56

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Site Preparation - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.3013	16.3549	30.4072	0.0682	5.4290	0.1131	5.5421	1.4533	0.1070	1.5603	0.0000	6,411.6584	6,411.6584	0.5217	0.0000	6,424.7018
Unmitigated	5.3013	16.3549	30.4072	0.0682	5.4290	0.1131	5.5421	1.4533	0.1070	1.5603	0.0000	6,411.6584	6,411.6584	0.5217	0.0000	6,424.7018

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	511.20	1,094.40	1476.00	426,767	426,767
Bank (with Drive-Through)	478.02	517.92	191.40	498,767	498,767
Day-Care Center	475.72	62.14	58.34	518,758	518,758
Gasoline/Service Station	3,096.18	3,279.06	3003.84	1,501,619	1,501,619
Health Club	1,140.00	793.06	1015.74	2,057,883	2,057,883
High Turnover (Sit Down Restaurant)	654.01	713.59	831.59	286,809	286,809
Hotel	1,651.05	1,417.50	1144.80	3,687,504	3,687,504
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Quality Restaurant	1,106.69	1,188.53	950.00	1,009,217	1,009,217
Regional Shopping Center	1,925.25	2,352.12	1076.10	2,416,706	2,416,706
User Defined Recreational	1,804.84	192.94	192.94	1,880,704	1,880,704
Total	12,842.96	11,611.26	9,940.76	14,284,735	14,284,735

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	16.60	8.40	6.90	33.00	48.00	19.00	14	0	86
Bank (with Drive-Through)	16.60	8.40	6.90	6.60	74.40	19.00	35	0	65
Day-Care Center	16.60	8.40	6.90	12.70	82.30	5.00	42	0	58
Gasoline/Service Station	16.60	8.40	6.90	2.00	79.00	19.00	15	0	85
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	55	0	45
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	12	0	88
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	27	0	73
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	37	0	63
User Defined Recreational	16.60	8.40	6.90	1.50	79.50	19.00	46	0	54

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Bank (with Drive-Through)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Day-Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Gasoline/Service Station	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Health Club	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
High Turnover (Sit Down Restaurant)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Hotel	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Other Asphalt Surfaces	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Parking Lot	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Quality Restaurant	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Regional Shopping Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
User Defined Recreational	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Bedford Marketplace (Operations) - San Bernardino-South Coast County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,049.0989	1,049.0989	0.0433	8.9600e-003	1,052.8521
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,049.0989	1,049.0989	0.0433	8.9600e-003	1,052.8521
NaturalGas Mitigated	0.0580	0.5272	0.4429	3.1600e-003		0.0401	0.0401		0.0401	0.0401	0.0000	573.9516	573.9516	0.0110	0.0105	577.3623
NaturalGas Unmitigated	0.0580	0.5272	0.4429	3.1600e-003		0.0401	0.0401		0.0401	0.0401	0.0000	573.9516	573.9516	0.0110	0.0105	577.3623

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	100368	5.4000e-004	4.9200e-003	4.1300e-003	3.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004	0.0000	5.3560	5.3560	1.0000e-004	1.0000e-004	5.3879
Bank (with Drive-Through)	167280	9.0000e-004	8.2000e-003	6.8900e-003	5.0000e-005		6.2000e-004	6.2000e-004		6.2000e-004	6.2000e-004	0.0000	8.9267	8.9267	1.7000e-004	1.6000e-004	8.9797
Day-Care Center	66633.3	3.6000e-004	3.2700e-003	2.7400e-003	2.0000e-005		2.5000e-004	2.5000e-004		2.5000e-004	2.5000e-004	0.0000	3.5558	3.5558	7.0000e-005	7.0000e-005	3.5769
Gasoline/Service Station	111520	6.0000e-004	5.4700e-003	4.5900e-003	3.0000e-005		4.2000e-004	4.2000e-004		4.2000e-004	4.2000e-004	0.0000	5.9511	5.9511	1.1000e-004	1.1000e-004	5.9865
Health Club	1.05944e+006	5.7100e-003	0.0519	0.0436	3.1000e-004		3.9500e-003	3.9500e-003		3.9500e-003	3.9500e-003	0.0000	56.5358	56.5358	1.0800e-003	1.0400e-003	56.8717
High Turnover (Sit Down Restaurant)	1.45732e+006	7.8600e-003	0.0714	0.0600	4.3000e-004		5.4300e-003	5.4300e-003		5.4300e-003	5.4300e-003	0.0000	77.7679	77.7679	1.4900e-003	1.4300e-003	78.2301
Hotel	3.85709e+006	0.0208	0.1891	0.1588	1.1300e-003		0.0144	0.0144		0.0144	0.0144	0.0000	205.8292	205.8292	3.9500e-003	3.7700e-003	207.0523
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	3.30185e+006	0.0178	0.1619	0.1360	9.7000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	176.1992	176.1992	3.3800e-003	3.2300e-003	177.2463
Regional Shopping Center	83640	4.5000e-004	4.1000e-003	3.4400e-003	2.0000e-005		3.1000e-004	3.1000e-004		3.1000e-004	3.1000e-004	0.0000	4.4634	4.4634	9.0000e-005	8.0000e-005	4.4899
User Defined Recreational	550308	2.9700e-003	0.0270	0.0227	1.6000e-004		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003	0.0000	29.3665	29.3665	5.6000e-004	5.4000e-004	29.5410
Total		**0.0580**	**0.5272**	**0.4429**	**3.1500e-003**		**0.0401**	**0.0401**		**0.0401**	**0.0401**	**0.0000**	**573.9516**	**573.9516**	**0.0110**	**0.0105**	**577.3623**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	100368	5.4000e-004	4.9200e-003	4.1300e-003	3.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004	0.0000	5.3560	5.3560	1.0000e-004	1.0000e-004	5.3879
Bank (with Drive-Through)	167280	9.0000e-004	8.2000e-003	6.8900e-003	5.0000e-005		6.2000e-004	6.2000e-004		6.2000e-004	6.2000e-004	0.0000	8.9267	8.9267	1.7000e-004	1.6000e-004	8.9797
Day-Care Center	66633.3	3.6000e-004	3.2700e-003	2.7400e-003	2.0000e-005		2.5000e-004	2.5000e-004		2.5000e-004	2.5000e-004	0.0000	3.5558	3.5558	7.0000e-005	7.0000e-005	3.5769
Gasoline/Service Station	111520	6.0000e-004	5.4700e-003	4.5900e-003	3.0000e-005		4.2000e-004	4.2000e-004		4.2000e-004	4.2000e-004	0.0000	5.9511	5.9511	1.1000e-004	1.1000e-004	5.9865
Health Club	1.05944e+006	5.7100e-003	0.0519	0.0436	3.1000e-004		3.9500e-003	3.9500e-003		3.9500e-003	3.9500e-003	0.0000	56.5358	56.5358	1.0800e-003	1.0400e-003	56.8717
High Turnover (Sit Down Restaurant)	1.45732e+006	7.8600e-003	0.0714	0.0600	4.3000e-004		5.4300e-003	5.4300e-003		5.4300e-003	5.4300e-003	0.0000	77.7679	77.7679	1.4900e-003	1.4300e-003	78.2301
Hotel	3.85709e+006	0.0208	0.1891	0.1588	1.1300e-003		0.0144	0.0144		0.0144	0.0144	0.0000	205.8292	205.8292	3.9500e-003	3.7700e-003	207.0523
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	3.30185e+006	0.0178	0.1619	0.1360	9.7000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	176.1992	176.1992	3.3800e-003	3.2300e-003	177.2463
Regional Shopping Center	83640	4.5000e-004	4.1000e-003	3.4400e-003	2.0000e-005		3.1000e-004	3.1000e-004		3.1000e-004	3.1000e-004	0.0000	4.4634	4.4634	9.0000e-005	8.0000e-005	4.4899
User Defined Recreational	550308	2.9700e-003	0.0270	0.0227	1.6000e-004		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003	0.0000	29.3665	29.3665	5.6000e-004	5.4000e-004	29.5410
Total		**0.0580**	**0.5272**	**0.4429**	**3.1500e-003**		**0.0401**	**0.0401**		**0.0401**	**0.0401**	**0.0000**	**573.9516**	**573.9516**	**0.0110**	**0.0105**	**577.3623**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	30996	9.8760	4.1000e-004	8.0000e-005	9.9113
Bank (with Drive-Through)	51660	16.4600	6.8000e-004	1.4000e-004	16.5189
Day-Care Center	55544.4	17.6976	7.3000e-004	1.5000e-004	17.7610
Gasoline/Service Station	34440	10.9733	4.5000e-004	9.0000e-005	11.0126
Health Club	327180	104.2466	4.3000e-003	8.9000e-004	104.6195
High Turnover (Sit Down Restaurant)	243410	77.5557	3.2000e-003	6.6000e-004	77.8332
Hotel	1.2928e+006	411.9125	0.0170	3.5200e-003	413.3862
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	124600	39.7002	1.6400e-003	3.4000e-004	39.8423
Quality Restaurant	551496	175.7184	7.2500e-003	1.5000e-003	176.3471
Regional Shopping Center	488580	155.6721	6.4300e-003	1.3300e-003	156.2290
User Defined Recreational	91916	29.2864	1.2100e-003	2.5000e-004	29.3912
Total		**1,049.0989**	**0.0433**	**8.9500e-003**	**1,052.8521**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	30996	9.8760	4.1000e-004	8.0000e-005	9.9113
Bank (with Drive-Through)	51660	16.4600	6.8000e-004	1.4000e-004	16.5189
Day-Care Center	55544.4	17.6976	7.3000e-004	1.5000e-004	17.7610
Gasoline/Service Station	34440	10.9733	4.5000e-004	9.0000e-005	11.0126
Health Club	327180	104.2466	4.3000e-003	8.9000e-004	104.6195
High Turnover (Sit Down Restaurant)	243410	77.5557	3.2000e-003	6.6000e-004	77.8332
Hotel	1.2928e+006	411.9125	0.0170	3.5200e-003	413.3862
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	124600	39.7002	1.6400e-003	3.4000e-004	39.8423
Quality Restaurant	551496	175.7184	7.2500e-003	1.5000e-003	176.3471
Regional Shopping Center	488580	155.6721	6.4300e-003	1.3300e-003	156.2290
User Defined Recreational	91916	29.2864	1.2100e-003	2.5000e-004	29.3912
Total		**1,049.0989**	**0.0433**	**8.9500e-003**	**1,052.8521**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.9693	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419
Unmitigated	0.9693	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1138					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8536					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.8900e-003	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419
Total	**0.9693**	**1.9000e-004**	**0.0203**	**0.0000**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.0393**	**0.0393**	**1.0000e-004**	**0.0000**	**0.0419**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1138					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8536					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.8900e-003	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419
Total	**0.9693**	**1.9000e-004**	**0.0203**	**0.0000**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.0393**	**0.0393**	**1.0000e-004**	**0.0000**	**0.0419**

7.0 Water Detail

7.1 Mitigation Measures Water

Bedford Marketplace (Operations) - San Bernardino-South Coast County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	110.5764	0.6539	0.0162	131.7601
Unmitigated	110.5764	0.6539	0.0162	131.7601

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	3.13642 / 0.207585	14.7421	0.1028	2.5300e-003	18.0655
Bank (with Drive-Through)	0.237738 / 0.14571	1.5775	7.8100e-003	2.0000e-004	1.8311
Day-Care Center	0.428467 / 1.10177	5.8137	0.0142	3.8000e-004	6.2813
Gasoline/Service Station	0.239074 / 0.146529	1.5864	7.8500e-003	2.0000e-004	1.8414
Health Club	2.24744 / 1.37746	14.9132	0.0738	1.8500e-003	17.3101
High Turnover (Sit Down Restaurant)	1.7696 / 0.112953	8.3029	0.0580	1.4300e-003	10.1779
Hotel	3.42451 / 0.380502	16.6409	0.1122	2.7700e-003	20.2714
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	4.00664 / 0.255743	18.7991	0.1313	3.2300e-003	23.0444
Regional Shopping Center	3.7777 / 2.31536	25.0674	0.1241	3.1100e-003	29.0964
User Defined Recreational	0.667774 / 0.0426239	3.1332	0.0219	5.4000e-004	3.8407
Total		**110.5764**	**0.6539**	**0.0162**	**131.7601**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	3.13642 / 0.207585	14.7421	0.1028	2.5300e-003	18.0655
Bank (with Drive-Through)	0.237738 / 0.14571	1.5775	7.8100e-003	2.0000e-004	1.8311
Day-Care Center	0.428467 / 1.10177	5.8137	0.0142	3.8000e-004	6.2813
Gasoline/Service Station	0.239074 / 0.146529	1.5864	7.8500e-003	2.0000e-004	1.8414
Health Club	2.24744 / 1.37746	14.9132	0.0738	1.8500e-003	17.3101
High Turnover (Sit Down Restaurant)	1.7696 / 0.112953	8.3029	0.0580	1.4300e-003	10.1779
Hotel	3.42451 / 0.380502	16.6409	0.1122	2.7700e-003	20.2714
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	4.00664 / 0.255743	18.7991	0.1313	3.2300e-003	23.0444
Regional Shopping Center	3.7777 / 2.31536	25.0674	0.1241	3.1100e-003	29.0964
User Defined Recreational	0.667774 / 0.0426239	3.1332	0.0219	5.4000e-004	3.8407
Total		**110.5764**	**0.6539**	**0.0162**	**131.7601**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	94.9023	5.6086	0.0000	235.1165
Unmitigated	94.9023	5.6086	0.0000	235.1165

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	13.75	2.7911	0.1650	0.0000	6.9149
Bank (with Drive-Through)	5.6	1.1368	0.0672	0.0000	2.8163
Day-Care Center	12.99	2.6369	0.1558	0.0000	6.5327
Gasoline/Service Station	9.7	1.9690	0.1164	0.0000	4.8781
Health Club	216.6	43.9678	2.5984	0.0000	108.9285
High Turnover (Sit Down Restaurant)	69.38	14.0835	0.8323	0.0000	34.8913
Hotel	73.91	15.0031	0.8867	0.0000	37.1695
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	12.04	2.4440	0.1444	0.0000	6.0549
Regional Shopping Center	53.55	10.8702	0.6424	0.0000	26.9304
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**94.9023**	**5.6086**	**0.0000**	**235.1165**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	13.75	2.7911	0.1650	0.0000	6.9149
Bank (with Drive-Through)	5.6	1.1368	0.0672	0.0000	2.8163
Day-Care Center	12.99	2.6369	0.1558	0.0000	6.5327
Gasoline/Service Station	9.7	1.9690	0.1164	0.0000	4.8781
Health Club	216.6	43.9678	2.5984	0.0000	108.9285
High Turnover (Sit Down Restaurant)	69.38	14.0835	0.8323	0.0000	34.8913
Hotel	73.91	15.0031	0.8867	0.0000	37.1695
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	12.04	2.4440	0.1444	0.0000	6.0549
Regional Shopping Center	53.55	10.8702	0.6424	0.0000	26.9304
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**94.9023**	**5.6086**	**0.0000**	**235.1165**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ATTACHMENT D

80 TSF COMMERCIAL CALEEMOD OUTPUTS

Bedford Marketplace (Operations)

San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Bank (with Drive-Through)	6.00	1000sqft	0.14	6,000.00	0
Day-Care Center	9.99	1000sqft	0.23	9,990.00	0
Other Asphalt Surfaces	408.85	1000sqft	9.39	408,852.00	0
Parking Lot	890.00	Space	8.17	356,000.00	0
Health Club	38.00	1000sqft	0.87	38,000.00	0
High Turnover (Sit Down Restaurant)	5.83	1000sqft	0.13	5,826.00	0
Hotel	135.00	Room	0.57	88,730.00	0
Quality Restaurant	13.20	1000sqft	0.30	13,200.00	0
User Defined Recreational	2.20	User Defined Unit	0.05	2,200.00	0
Automobile Care Center	3.60	1000sqft	0.08	3,600.00	0
Gasoline/Service Station	18.00	Pump	0.09	4,000.00	0
Regional Shopping Center	51.00	1000sqft	1.17	51,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Net Land Area per the Site Plan is +/-21.2 acres.

Construction Phase - Operations Run Only.

Off-road Equipment - Hours are based on an 8-hour workday.

Off-road Equipment - Operations Run Only.

Trips and VMT - Operations Run Only.

Grading -

Architectural Coating - Rule 1113

Vehicle Trips - Trip Rates based on information provided in the TIA.

Energy Use - Energy rates for User Defined Recreational (Coffee/Shop use) reflect the CalEEMod default rates for Fast-Food Restaurant with Drive Thru.

Water And Wastewater - Water rates adjusted to assume that half of the trips to the car wash will use approximately 30 gallons of water

Solid Waste -

Construction Off-road Equipment Mitigation -

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	3.03	2.12
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	6.62	4.63
tblEnergyUse	LightingElect	5.44	3.81

Bedford Marketplace (Operations) - San Bernardino-South Coast County, Annual

tblEnergyUse	LightingElect	6.62	4.63
tblEnergyUse	LightingElect	5.61	3.93
tblEnergyUse	LightingElect	0.00	4.63
tblEnergyUse	NT24E	0.00	28.48
tblEnergyUse	NT24NG	0.00	195.77
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	2.78	1.95
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	12.38	8.67
tblEnergyUse	T24E	6.47	4.53
tblEnergyUse	T24E	12.38	8.67
tblEnergyUse	T24E	4.58	3.21
tblEnergyUse	T24E	0.00	8.67
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	6.97	4.88
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	77.67	54.37
tblEnergyUse	T24NG	55.15	38.61
tblEnergyUse	T24NG	77.67	54.37
tblEnergyUse	T24NG	1.92	1.34
tblEnergyUse	T24NG	0.00	54.37
tblLandUse	LandUseSquareFeet	408,850.00	408,852.00
tblLandUse	LandUseSquareFeet	5,830.00	5,826.00

Bedford Marketplace (Operations) - San Bernardino-South Coast County, Annual

tblLandUse	LandUseSquareFeet	196,020.00	88,730.00
tblLandUse	LandUseSquareFeet	0.00	2,200.00
tblLandUse	LandUseSquareFeet	2,541.15	4,000.00
tblLandUse	LotAcreage	8.01	8.17
tblLandUse	LotAcreage	4.50	0.57
tblLandUse	LotAcreage	0.00	0.05
tblLandUse	LotAcreage	0.06	0.09
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblVehicleEF	HHD	1.24	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	3.46	7.82
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.92	2.4420e-003
tblVehicleEF	HHD	6,983.95	1,459.93
tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.07	7.65
tblVehicleEF	HHD	2.87	3.24
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03

tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004
tblVehicleEF	HHD	0.89	0.60
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	2.4200e-004	6.3700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004
tblVehicleEF	HHD	1.02	0.68
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4200e-004	6.3700e-004
tblVehicleEF	HHD	0.07	1.0000e-006
tblVehicleEF	HHD	1.17	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	2.52	7.65
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.80	2.2950e-003
tblVehicleEF	HHD	7,395.94	1,453.32

tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.97	7.40
tblVehicleEF	HHD	2.70	3.05
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	1.8400e-004	9.0000e-006
tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.84	0.62
tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.7000e-005	0.00
tblVehicleEF	HHD	1.8400e-004	9.0000e-006
tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.97	0.71

tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	1.34	0.03
tblVehicleEF	HHD	0.04	3.7740e-003
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	4.76	7.98
tblVehicleEF	HHD	0.58	0.36
tblVehicleEF	HHD	1.89	2.4140e-003
tblVehicleEF	HHD	6,415.00	1,454.79
tblVehicleEF	HHD	1,493.95	1,371.01
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	26.84	7.90
tblVehicleEF	HHD	2.83	3.15
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.8160e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004

tblVehicleEF	HHD	0.96	0.56
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.08
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.06	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004
tblVehicleEF	HHD	1.10	0.64
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.09
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.07	1.0000e-006
tblVehicleEF	LDA	4.6640e-003	2.7950e-003
tblVehicleEF	LDA	6.4640e-003	0.06
tblVehicleEF	LDA	0.62	0.70
tblVehicleEF	LDA	1.32	2.22
tblVehicleEF	LDA	261.85	269.33
tblVehicleEF	LDA	59.28	55.48
tblVehicleEF	LDA	0.06	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07

tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.6230e-003	2.6640e-003
tblVehicleEF	LDA	6.1500e-004	5.4900e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.10	0.27
tblVehicleEF	LDA	5.3170e-003	3.2030e-003
tblVehicleEF	LDA	5.3900e-003	0.05
tblVehicleEF	LDA	0.76	0.86
tblVehicleEF	LDA	1.10	1.85
tblVehicleEF	LDA	286.52	294.16
tblVehicleEF	LDA	59.28	54.75
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11

tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.07	0.21
tblVehicleEF	LDA	2.8710e-003	2.9100e-003
tblVehicleEF	LDA	6.1100e-004	5.4200e-004
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.08	0.23
tblVehicleEF	LDA	4.5320e-003	2.7260e-003
tblVehicleEF	LDA	6.4200e-003	0.06
tblVehicleEF	LDA	0.58	0.67
tblVehicleEF	LDA	1.30	2.19
tblVehicleEF	LDA	256.02	263.51
tblVehicleEF	LDA	59.28	55.41
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.25

tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.5640e-003	2.6070e-003
tblVehicleEF	LDA	6.1500e-004	5.4800e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.25
tblVehicleEF	LDA	0.09	0.27
tblVehicleEF	LDT1	0.02	8.1890e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.71	1.63
tblVehicleEF	LDT1	4.02	2.54
tblVehicleEF	LDT1	323.73	319.09
tblVehicleEF	LDT1	72.77	67.44
tblVehicleEF	LDT1	0.18	0.15
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.29	0.48
tblVehicleEF	LDT1	3.2600e-003	3.1580e-003

tblVehicleEF	LDT1	7.9900e-004	6.6700e-004
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.06	0.05
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT1	0.02	9.2860e-003
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	2.05	1.97
tblVehicleEF	LDT1	3.30	2.10
tblVehicleEF	LDT1	352.65	345.09
tblVehicleEF	LDT1	72.77	66.47
tblVehicleEF	LDT1	0.16	0.13
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.40	0.44
tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.24	0.41
tblVehicleEF	LDT1	3.5540e-003	3.4150e-003
tblVehicleEF	LDT1	7.8600e-004	6.5800e-004
tblVehicleEF	LDT1	0.40	0.44

tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.06	0.06
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.26	0.44
tblVehicleEF	LDT1	0.01	7.9980e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.62	1.55
tblVehicleEF	LDT1	3.95	2.49
tblVehicleEF	LDT1	316.91	312.93
tblVehicleEF	LDT1	72.77	67.36
tblVehicleEF	LDT1	0.17	0.14
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.28	0.48
tblVehicleEF	LDT1	3.1900e-003	3.0970e-003
tblVehicleEF	LDT1	7.9800e-004	6.6700e-004
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13

tblVehicleEF	LDT1	0.05	0.05
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT2	6.9330e-003	4.8260e-003
tblVehicleEF	LDT2	9.2890e-003	0.08
tblVehicleEF	LDT2	0.85	1.06
tblVehicleEF	LDT2	1.85	2.89
tblVehicleEF	LDT2	363.70	344.02
tblVehicleEF	LDT2	81.97	72.94
tblVehicleEF	LDT2	0.10	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.13	0.38
tblVehicleEF	LDT2	3.6440e-003	3.4040e-003
tblVehicleEF	LDT2	8.5100e-004	7.2200e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50

tblVehicleEF	LDT2	0.14	0.42
tblVehicleEF	LDT2	7.8730e-003	5.5090e-003
tblVehicleEF	LDT2	7.7350e-003	0.07
tblVehicleEF	LDT2	1.04	1.30
tblVehicleEF	LDT2	1.53	2.39
tblVehicleEF	LDT2	397.09	369.57
tblVehicleEF	LDT2	81.97	71.94
tblVehicleEF	LDT2	0.09	0.09
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	3.9810e-003	3.6570e-003
tblVehicleEF	LDT2	8.4600e-004	7.1200e-004
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.11	0.35
tblVehicleEF	LDT2	6.7430e-003	4.7100e-003

tblVehicleEF	LDT2	9.2200e-003	0.08
tblVehicleEF	LDT2	0.81	1.01
tblVehicleEF	LDT2	1.82	2.84
tblVehicleEF	LDT2	355.82	337.97
tblVehicleEF	LDT2	81.97	72.85
tblVehicleEF	LDT2	0.09	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.58
tblVehicleEF	LDT2	0.12	0.38
tblVehicleEF	LDT2	3.5650e-003	3.3440e-003
tblVehicleEF	LDT2	8.5100e-004	7.2100e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.08	0.58
tblVehicleEF	LDT2	0.14	0.41
tblVehicleEF	LHD1	5.4860e-003	4.9840e-003
tblVehicleEF	LHD1	0.01	7.1410e-003
tblVehicleEF	LHD1	0.02	0.02

tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.77	1.07
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.99
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.26	1.69
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.29	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6200e-004	1.0900e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003

tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD1	5.4860e-003	5.0000e-003
tblVehicleEF	LHD1	0.01	7.3180e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.18	0.99
tblVehicleEF	LHD1	2.58	1.00
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.98
tblVehicleEF	LHD1	30.92	10.87
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.12	1.58
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11

tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.27	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0370e-003	6.3960e-003
tblVehicleEF	LHD1	3.5800e-004	1.0800e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.30	0.09
tblVehicleEF	LHD1	5.4860e-003	4.9870e-003
tblVehicleEF	LHD1	0.01	7.1590e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.72	1.05
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.96
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.22	1.66
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004

tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6100e-004	1.0800e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD2	3.8190e-003	3.4060e-003
tblVehicleEF	LHD2	5.2410e-003	4.5240e-003
tblVehicleEF	LHD2	9.1660e-003	0.01

tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.29	0.64
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.51
tblVehicleEF	LHD2	24.89	7.96
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.69	1.81
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7300e-004	7.9000e-005
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05

tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.14	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4160e-003
tblVehicleEF	LHD2	5.3190e-003	4.5750e-003
tblVehicleEF	LHD2	8.7380e-003	9.6870e-003
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.56	0.62
tblVehicleEF	LHD2	1.21	0.60
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.89
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.59	1.70
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02

tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7100e-004	7.8000e-005
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4070e-003
tblVehicleEF	LHD2	5.2490e-003	4.5300e-003
tblVehicleEF	LHD2	9.0820e-003	0.01
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.27	0.63
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.94
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.67	1.78
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01

tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7200e-004	7.9000e-005
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.16	0.25
tblVehicleEF	MCY	21.02	21.16
tblVehicleEF	MCY	9.91	8.77
tblVehicleEF	MCY	167.12	211.16
tblVehicleEF	MCY	46.87	61.87

tblVehicleEF	MCY	1.17	1.17
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84
tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.26	2.26
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.17	1.92
tblVehicleEF	MCY	2.0790e-003	2.0900e-003
tblVehicleEF	MCY	6.9500e-004	6.1200e-004
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84
tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.76	2.76
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.37	2.08
tblVehicleEF	MCY	0.41	0.32
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	21.14	21.29
tblVehicleEF	MCY	9.06	7.97
tblVehicleEF	MCY	167.12	211.14
tblVehicleEF	MCY	46.87	59.68
tblVehicleEF	MCY	0.99	0.99
tblVehicleEF	MCY	1.8190e-003	1.7890e-003

tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.19	2.19
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	1.87	1.64
tblVehicleEF	MCY	2.0790e-003	2.0890e-003
tblVehicleEF	MCY	6.7100e-004	5.9100e-004
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.69	2.68
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.03	1.78
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	20.06	20.18
tblVehicleEF	MCY	9.53	8.41
tblVehicleEF	MCY	167.12	209.47
tblVehicleEF	MCY	46.87	61.06
tblVehicleEF	MCY	1.13	1.13
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003

tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.22	2.22
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.10	1.84
tblVehicleEF	MCY	2.0630e-003	2.0730e-003
tblVehicleEF	MCY	6.8600e-004	6.0400e-004
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.71	2.71
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.28	2.00
tblVehicleEF	MDV	0.01	6.6050e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.55	1.33
tblVehicleEF	MDV	3.59	3.53
tblVehicleEF	MDV	498.66	425.70
tblVehicleEF	MDV	110.76	90.07
tblVehicleEF	MDV	0.20	0.14
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12

tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.28	0.50
tblVehicleEF	MDV	5.0000e-003	4.2090e-003
tblVehicleEF	MDV	1.1710e-003	8.9100e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MDV	0.02	7.4780e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.87	1.60
tblVehicleEF	MDV	2.99	2.92
tblVehicleEF	MDV	542.90	452.84
tblVehicleEF	MDV	110.76	88.84
tblVehicleEF	MDV	0.18	0.12
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22

tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.24	0.42
tblVehicleEF	MDV	5.4470e-003	4.4780e-003
tblVehicleEF	MDV	1.1600e-003	8.7900e-004
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22
tblVehicleEF	MDV	0.06	0.05
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.26	0.46
tblVehicleEF	MDV	0.01	6.4310e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.47	1.25
tblVehicleEF	MDV	3.53	3.47
tblVehicleEF	MDV	488.33	419.25
tblVehicleEF	MDV	110.76	89.97
tblVehicleEF	MDV	0.19	0.13
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.13	0.61

tblVehicleEF	MDV	0.28	0.49
tblVehicleEF	MDV	4.8960e-003	4.1450e-003
tblVehicleEF	MDV	1.1700e-003	8.9000e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.13	0.61
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.60	0.37
tblVehicleEF	MH	6.96	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.64	4.70
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00

tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.2000e-004	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.44	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.74	0.37
tblVehicleEF	MH	6.31	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.50	4.42
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00

tblVehicleEF	MH	0.37	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.0900e-004	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.41	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.61	0.37
tblVehicleEF	MH	6.87	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.61	4.62
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00

tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.1900e-004	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.43	0.00
tblVehicleEF	MHD	0.02	3.2250e-003
tblVehicleEF	MHD	4.1450e-003	6.0340e-003
tblVehicleEF	MHD	0.06	8.8310e-003
tblVehicleEF	MHD	0.33	0.34
tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	6.00	1.03
tblVehicleEF	MHD	155.10	71.06
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.43
tblVehicleEF	MHD	0.63	0.61
tblVehicleEF	MHD	1.08	2.22
tblVehicleEF	MHD	4.3700e-004	2.0190e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	4.1800e-004	1.9320e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004

tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.11
tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.4910e-003	6.7400e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4400e-004	8.3000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.11
tblVehicleEF	MHD	0.40	0.05
tblVehicleEF	MHD	0.02	3.0610e-003
tblVehicleEF	MHD	4.2290e-003	6.0860e-003
tblVehicleEF	MHD	0.05	8.4200e-003
tblVehicleEF	MHD	0.24	0.28
tblVehicleEF	MHD	0.32	0.56
tblVehicleEF	MHD	5.61	0.96
tblVehicleEF	MHD	164.29	72.29
tblVehicleEF	MHD	1,105.72	1,029.54
tblVehicleEF	MHD	53.92	8.32
tblVehicleEF	MHD	0.65	0.62
tblVehicleEF	MHD	1.01	2.09

tblVehicleEF	MHD	3.6900e-004	1.7050e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	3.5300e-004	1.6310e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.35	0.04
tblVehicleEF	MHD	1.5770e-003	6.8600e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.3800e-004	8.2000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.38	0.05
tblVehicleEF	MHD	0.02	3.4660e-003
tblVehicleEF	MHD	4.1530e-003	6.0380e-003
tblVehicleEF	MHD	0.06	8.7320e-003
tblVehicleEF	MHD	0.46	0.42

tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	5.90	1.02
tblVehicleEF	MHD	142.41	69.34
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.40
tblVehicleEF	MHD	0.60	0.60
tblVehicleEF	MHD	1.06	2.18
tblVehicleEF	MHD	5.3200e-004	2.4540e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	5.0900e-004	2.3480e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	7.0500e-004	3.2200e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.13
tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.3710e-003	6.5800e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4300e-004	8.3000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	7.0500e-004	3.2200e-004

tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.13
tblVehicleEF	MHD	0.39	0.05
tblVehicleEF	OBUS	0.01	9.3650e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.27	0.49
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.67	2.81
tblVehicleEF	OBUS	70.21	68.33
tblVehicleEF	OBUS	1,126.32	1,507.23
tblVehicleEF	OBUS	71.08	22.19
tblVehicleEF	OBUS	0.32	0.39
tblVehicleEF	OBUS	1.10	1.47
tblVehicleEF	OBUS	1.1300e-004	1.5090e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.0800e-004	1.4440e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.41	0.13

tblVehicleEF	OBUS	6.8200e-004	6.5300e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2800e-004	2.2000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	OBUS	0.01	9.3930e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.26	0.47
tblVehicleEF	OBUS	0.75	1.22
tblVehicleEF	OBUS	6.11	2.57
tblVehicleEF	OBUS	73.34	68.71
tblVehicleEF	OBUS	1,126.32	1,507.28
tblVehicleEF	OBUS	71.08	21.80
tblVehicleEF	OBUS	0.33	0.39
tblVehicleEF	OBUS	1.02	1.35
tblVehicleEF	OBUS	9.5000e-005	1.2750e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	9.1000e-005	1.2200e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004

tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.05	0.09
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.39	0.13
tblVehicleEF	OBUS	7.1200e-004	6.5600e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.1800e-004	2.1600e-004
tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.07	0.11
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.42	0.14
tblVehicleEF	OBUS	0.01	9.3640e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.28	0.51
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.62	2.79
tblVehicleEF	OBUS	65.88	67.80
tblVehicleEF	OBUS	1,126.32	1,507.24
tblVehicleEF	OBUS	71.08	22.15
tblVehicleEF	OBUS	0.31	0.39

tblVehicleEF	OBUS	1.08	1.44
tblVehicleEF	OBUS	1.3700e-004	1.8320e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.3100e-004	1.7520e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.41	0.13
tblVehicleEF	OBUS	6.4100e-004	6.4800e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2700e-004	2.1900e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3980e-003
tblVehicleEF	SBUS	0.07	3.9120e-003

tblVehicleEF	SBUS	5.64	1.82
tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.49	0.54
tblVehicleEF	SBUS	1,270.71	336.96
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.11
tblVehicleEF	SBUS	12.46	3.45
tblVehicleEF	SBUS	5.17	5.36
tblVehicleEF	SBUS	0.01	4.4720e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	4.2790e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004
tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.68	0.19
tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.28	0.02
tblVehicleEF	SBUS	0.01	3.2020e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004

tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.31	0.02
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.4900e-003
tblVehicleEF	SBUS	0.06	3.2450e-003
tblVehicleEF	SBUS	5.48	1.78
tblVehicleEF	SBUS	0.72	0.64
tblVehicleEF	SBUS	3.76	0.38
tblVehicleEF	SBUS	1,335.64	345.46
tblVehicleEF	SBUS	1,144.20	1,143.58
tblVehicleEF	SBUS	36.06	2.85
tblVehicleEF	SBUS	12.86	3.52
tblVehicleEF	SBUS	4.84	5.03
tblVehicleEF	SBUS	0.01	3.7780e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	3.6140e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003

tblVehicleEF	SBUS	0.67	0.19
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.23	0.02
tblVehicleEF	SBUS	0.01	3.2820e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.2700e-004	2.8000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003
tblVehicleEF	SBUS	0.96	0.27
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.25	0.02
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3930e-003
tblVehicleEF	SBUS	0.07	4.0100e-003
tblVehicleEF	SBUS	5.85	1.87
tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.54	0.56
tblVehicleEF	SBUS	1,181.05	325.23
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.14
tblVehicleEF	SBUS	11.91	3.35
tblVehicleEF	SBUS	5.09	5.28
tblVehicleEF	SBUS	0.02	5.4310e-003

tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.02	5.1960e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003
tblVehicleEF	SBUS	0.68	0.19
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.29	0.02
tblVehicleEF	SBUS	0.01	3.0910e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003
tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.32	0.03
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.79	32.64

tblVehicleEF	UBUS	14.93	1.46
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.41
tblVehicleEF	UBUS	6.43	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004
tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.19	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.6230e-003	1.7200e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004
tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.30	0.08
tblVehicleEF	UBUS	1.95	4.19

tblVehicleEF	UBUS	0.08	0.02
tblVehicleEF	UBUS	9.90	32.64
tblVehicleEF	UBUS	12.23	1.20
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	16.98
tblVehicleEF	UBUS	5.98	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	0.02	3.2040e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	0.67	0.06
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.06	0.06
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.5760e-003	1.6800e-004
tblVehicleEF	UBUS	0.02	3.2040e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	2.69	4.28
tblVehicleEF	UBUS	0.02	0.05

tblVehicleEF	UBUS	1.16	0.07
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.80	32.64
tblVehicleEF	UBUS	14.43	1.42
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.36
tblVehicleEF	UBUS	6.31	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004
tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.17	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.6140e-003	1.7200e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004

tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.28	0.08
tblVehicleTrips	CC_TTP	0.00	79.50
tblVehicleTrips	CNW_TTP	0.00	19.00
tblVehicleTrips	CW_TTP	0.00	1.50
tblVehicleTrips	DV_TP	51.00	0.00
tblVehicleTrips	DV_TP	26.00	0.00
tblVehicleTrips	DV_TP	58.00	0.00
tblVehicleTrips	DV_TP	27.00	0.00
tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	DV_TP	20.00	0.00
tblVehicleTrips	DV_TP	18.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	PB_TP	28.00	86.00
tblVehicleTrips	PB_TP	47.00	65.00
tblVehicleTrips	PB_TP	14.00	58.00
tblVehicleTrips	PB_TP	59.00	85.00
tblVehicleTrips	PB_TP	9.00	45.00
tblVehicleTrips	PB_TP	43.00	88.00
tblVehicleTrips	PB_TP	44.00	73.00
tblVehicleTrips	PB_TP	11.00	63.00
tblVehicleTrips	PB_TP	0.00	54.00
tblVehicleTrips	PR_TP	21.00	14.00
tblVehicleTrips	PR_TP	27.00	35.00
tblVehicleTrips	PR_TP	28.00	42.00
tblVehicleTrips	PR_TP	14.00	15.00

tblVehicleTrips	PR_TP	52.00	55.00
tblVehicleTrips	PR_TP	37.00	12.00
tblVehicleTrips	PR_TP	38.00	27.00
tblVehicleTrips	PR_TP	54.00	37.00
tblVehicleTrips	PR_TP	0.00	46.00
tblVehicleTrips	ST_TR	23.72	304.00
tblVehicleTrips	ST_TR	6.21	6.22
tblVehicleTrips	ST_TR	168.56	182.17
tblVehicleTrips	ST_TR	158.37	122.40
tblVehicleTrips	ST_TR	8.19	10.50
tblVehicleTrips	ST_TR	94.36	90.04
tblVehicleTrips	ST_TR	49.97	46.12
tblVehicleTrips	ST_TR	0.00	87.70
tblVehicleTrips	SU_TR	11.88	410.00
tblVehicleTrips	SU_TR	5.83	5.84
tblVehicleTrips	SU_TR	168.56	166.88
tblVehicleTrips	SU_TR	131.84	142.64
tblVehicleTrips	SU_TR	5.95	8.48
tblVehicleTrips	SU_TR	72.16	71.97
tblVehicleTrips	SU_TR	25.24	21.10
tblVehicleTrips	SU_TR	0.00	87.70
tblVehicleTrips	WD_TR	23.72	142.00
tblVehicleTrips	WD_TR	148.15	79.67
tblVehicleTrips	WD_TR	74.06	47.62
tblVehicleTrips	WD_TR	168.56	172.01
tblVehicleTrips	WD_TR	32.93	30.00
tblVehicleTrips	WD_TR	127.15	112.18

tblVehicleTrips	WD_TR	8.17	12.23
tblVehicleTrips	WD_TR	89.95	83.84
tblVehicleTrips	WD_TR	42.70	37.75
tblVehicleTrips	WD_TR	0.00	820.38
tblWater	IndoorWaterUseRate	338,691.99	3,136,416.99
tblWater	IndoorWaterUseRate	0.00	667,774.17
tblWater	OutdoorWaterUseRate	0.00	42,623.88

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Bedford Marketplace (Operations) - San Bernardino-South Coast County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9693	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419
Energy	0.0580	0.5272	0.4429	3.1600e-003		0.0401	0.0401		0.0401	0.0401	0.0000	1,623.0505	1,623.0505	0.0543	0.0195	1,630.2143
Mobile	5.3013	16.3549	30.4072	0.0682	5.4290	0.1131	5.5421	1.4533	0.1070	1.5603	0.0000	6,411.6584	6,411.6584	0.5217	0.0000	6,424.7018
Waste						0.0000	0.0000		0.0000	0.0000	94.9023	0.0000	94.9023	5.6086	0.0000	235.1165
Water						0.0000	0.0000		0.0000	0.0000	6.3246	104.2519	110.5764	0.6539	0.0162	131.7601
Total	**6.3286**	**16.8823**	**30.8703**	**0.0713**	**5.4290**	**0.1532**	**5.5822**	**1.4533**	**0.1472**	**1.6005**	**101.2269**	**8,138.9999**	**8,240.2268**	**6.8386**	**0.0357**	**8,421.8346**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9693	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419
Energy	0.0580	0.5272	0.4429	3.1600e-003		0.0401	0.0401		0.0401	0.0401	0.0000	1,623.0505	1,623.0505	0.0543	0.0195	1,630.2143
Mobile	5.3013	16.3549	30.4072	0.0682	5.4290	0.1131	5.5421	1.4533	0.1070	1.5603	0.0000	6,411.6584	6,411.6584	0.5217	0.0000	6,424.7018
Waste						0.0000	0.0000		0.0000	0.0000	94.9023	0.0000	94.9023	5.6086	0.0000	235.1165
Water						0.0000	0.0000		0.0000	0.0000	6.3246	104.2519	110.5764	0.6539	0.0162	131.7601
Total	**6.3286**	**16.8823**	**30.8703**	**0.0713**	**5.4290**	**0.1532**	**5.5822**	**1.4533**	**0.1472**	**1.6005**	**101.2269**	**8,138.9999**	**8,240.2268**	**6.8386**	**0.0357**	**8,421.8346**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/25/2020	6/25/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 17.56

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Site Preparation - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.3013	16.3549	30.4072	0.0682	5.4290	0.1131	5.5421	1.4533	0.1070	1.5603	0.0000	6,411.6584	6,411.6584	0.5217	0.0000	6,424.7018
Unmitigated	5.3013	16.3549	30.4072	0.0682	5.4290	0.1131	5.5421	1.4533	0.1070	1.5603	0.0000	6,411.6584	6,411.6584	0.5217	0.0000	6,424.7018

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	511.20	1,094.40	1476.00	426,767	426,767
Bank (with Drive-Through)	478.02	517.92	191.40	498,767	498,767
Day-Care Center	475.72	62.14	58.34	518,758	518,758
Gasoline/Service Station	3,096.18	3,279.06	3003.84	1,501,619	1,501,619
Health Club	1,140.00	793.06	1015.74	2,057,883	2,057,883
High Turnover (Sit Down Restaurant)	654.01	713.59	831.59	286,809	286,809
Hotel	1,651.05	1,417.50	1144.80	3,687,504	3,687,504
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Quality Restaurant	1,106.69	1,188.53	950.00	1,009,217	1,009,217
Regional Shopping Center	1,925.25	2,352.12	1076.10	2,416,706	2,416,706
User Defined Recreational	1,804.84	192.94	192.94	1,880,704	1,880,704
Total	12,842.96	11,611.26	9,940.76	14,284,735	14,284,735

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	16.60	8.40	6.90	33.00	48.00	19.00	14	0	86
Bank (with Drive-Through)	16.60	8.40	6.90	6.60	74.40	19.00	35	0	65
Day-Care Center	16.60	8.40	6.90	12.70	82.30	5.00	42	0	58
Gasoline/Service Station	16.60	8.40	6.90	2.00	79.00	19.00	15	0	85
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	55	0	45
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	12	0	88
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	27	0	73
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	37	0	63
User Defined Recreational	16.60	8.40	6.90	1.50	79.50	19.00	46	0	54

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Bank (with Drive-Through)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Day-Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Gasoline/Service Station	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Health Club	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
High Turnover (Sit Down Restaurant)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Hotel	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Other Asphalt Surfaces	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Parking Lot	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Quality Restaurant	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Regional Shopping Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
User Defined Recreational	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Bedford Marketplace (Operations) - San Bernardino-South Coast County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,049.0989	1,049.0989	0.0433	8.9600e-003	1,052.8521
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,049.0989	1,049.0989	0.0433	8.9600e-003	1,052.8521
NaturalGas Mitigated	0.0580	0.5272	0.4429	3.1600e-003		0.0401	0.0401		0.0401	0.0401	0.0000	573.9516	573.9516	0.0110	0.0105	577.3623
NaturalGas Unmitigated	0.0580	0.5272	0.4429	3.1600e-003		0.0401	0.0401		0.0401	0.0401	0.0000	573.9516	573.9516	0.0110	0.0105	577.3623

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	100368	5.4000e-004	4.9200e-003	4.1300e-003	3.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004	0.0000	5.3560	5.3560	1.0000e-004	1.0000e-004	5.3879
Bank (with Drive-Through)	167280	9.0000e-004	8.2000e-003	6.8900e-003	5.0000e-005		6.2000e-004	6.2000e-004		6.2000e-004	6.2000e-004	0.0000	8.9267	8.9267	1.7000e-004	1.6000e-004	8.9797
Day-Care Center	66633.3	3.6000e-004	3.2700e-003	2.7400e-003	2.0000e-005		2.5000e-004	2.5000e-004		2.5000e-004	2.5000e-004	0.0000	3.5558	3.5558	7.0000e-005	7.0000e-005	3.5769
Gasoline/Service Station	111520	6.0000e-004	5.4700e-003	4.5900e-003	3.0000e-005		4.2000e-004	4.2000e-004		4.2000e-004	4.2000e-004	0.0000	5.9511	5.9511	1.1000e-004	1.1000e-004	5.9865
Health Club	1.05944e+006	5.7100e-003	0.0519	0.0436	3.1000e-004		3.9500e-003	3.9500e-003		3.9500e-003	3.9500e-003	0.0000	56.5358	56.5358	1.0800e-003	1.0400e-003	56.8717
High Turnover (Sit Down Restaurant)	1.45732e+006	7.8600e-003	0.0714	0.0600	4.3000e-004		5.4300e-003	5.4300e-003		5.4300e-003	5.4300e-003	0.0000	77.7679	77.7679	1.4900e-003	1.4300e-003	78.2301
Hotel	3.85709e+006	0.0208	0.1891	0.1588	1.1300e-003		0.0144	0.0144		0.0144	0.0144	0.0000	205.8292	205.8292	3.9500e-003	3.7700e-003	207.0523
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	3.30185e+006	0.0178	0.1619	0.1360	9.7000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	176.1992	176.1992	3.3800e-003	3.2300e-003	177.2463
Regional Shopping Center	83640	4.5000e-004	4.1000e-003	3.4400e-003	2.0000e-005		3.1000e-004	3.1000e-004		3.1000e-004	3.1000e-004	0.0000	4.4634	4.4634	9.0000e-005	8.0000e-005	4.4899
User Defined Recreational	550308	2.9700e-003	0.0270	0.0227	1.6000e-004		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003	0.0000	29.3665	29.3665	5.6000e-004	5.4000e-004	29.5410
Total		**0.0580**	**0.5272**	**0.4429**	**3.1500e-003**		**0.0401**	**0.0401**		**0.0401**	**0.0401**	**0.0000**	**573.9516**	**573.9516**	**0.0110**	**0.0105**	**577.3623**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	100368	5.4000e-004	4.9200e-003	4.1300e-003	3.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004	0.0000	5.3560	5.3560	1.0000e-004	1.0000e-004	5.3879
Bank (with Drive-Through)	167280	9.0000e-004	8.2000e-003	6.8900e-003	5.0000e-005		6.2000e-004	6.2000e-004		6.2000e-004	6.2000e-004	0.0000	8.9267	8.9267	1.7000e-004	1.6000e-004	8.9797
Day-Care Center	66633.3	3.6000e-004	3.2700e-003	2.7400e-003	2.0000e-005		2.5000e-004	2.5000e-004		2.5000e-004	2.5000e-004	0.0000	3.5558	3.5558	7.0000e-005	7.0000e-005	3.5769
Gasoline/Service Station	111520	6.0000e-004	5.4700e-003	4.5900e-003	3.0000e-005		4.2000e-004	4.2000e-004		4.2000e-004	4.2000e-004	0.0000	5.9511	5.9511	1.1000e-004	1.1000e-004	5.9865
Health Club	1.05944e+006	5.7100e-003	0.0519	0.0436	3.1000e-004		3.9500e-003	3.9500e-003		3.9500e-003	3.9500e-003	0.0000	56.5358	56.5358	1.0800e-003	1.0400e-003	56.8717
High Turnover (Sit Down Restaurant)	1.45732e+006	7.8600e-003	0.0714	0.0600	4.3000e-004		5.4300e-003	5.4300e-003		5.4300e-003	5.4300e-003	0.0000	77.7679	77.7679	1.4900e-003	1.4300e-003	78.2301
Hotel	3.85709e+006	0.0208	0.1891	0.1588	1.1300e-003		0.0144	0.0144		0.0144	0.0144	0.0000	205.8292	205.8292	3.9500e-003	3.7700e-003	207.0523
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	3.30185e+006	0.0178	0.1619	0.1360	9.7000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	176.1992	176.1992	3.3800e-003	3.2300e-003	177.2463
Regional Shopping Center	83640	4.5000e-004	4.1000e-003	3.4400e-003	2.0000e-005		3.1000e-004	3.1000e-004		3.1000e-004	3.1000e-004	0.0000	4.4634	4.4634	9.0000e-005	8.0000e-005	4.4899
User Defined Recreational	550308	2.9700e-003	0.0270	0.0227	1.6000e-004		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003	0.0000	29.3665	29.3665	5.6000e-004	5.4000e-004	29.5410
Total		**0.0580**	**0.5272**	**0.4429**	**3.1500e-003**		**0.0401**	**0.0401**		**0.0401**	**0.0401**	**0.0000**	**573.9516**	**573.9516**	**0.0110**	**0.0105**	**577.3623**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	30996	9.8760	4.1000e-004	8.0000e-005	9.9113
Bank (with Drive-Through)	51660	16.4600	6.8000e-004	1.4000e-004	16.5189
Day-Care Center	55544.4	17.6976	7.3000e-004	1.5000e-004	17.7610
Gasoline/Service Station	34440	10.9733	4.5000e-004	9.0000e-005	11.0126
Health Club	327180	104.2466	4.3000e-003	8.9000e-004	104.6195
High Turnover (Sit Down Restaurant)	243410	77.5557	3.2000e-003	6.6000e-004	77.8332
Hotel	1.2928e+006	411.9125	0.0170	3.5200e-003	413.3862
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	124600	39.7002	1.6400e-003	3.4000e-004	39.8423
Quality Restaurant	551496	175.7184	7.2500e-003	1.5000e-003	176.3471
Regional Shopping Center	488580	155.6721	6.4300e-003	1.3300e-003	156.2290
User Defined Recreational	91916	29.2864	1.2100e-003	2.5000e-004	29.3912
Total		**1,049.0989**	**0.0433**	**8.9500e-003**	**1,052.8521**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	30996	9.8760	4.1000e-004	8.0000e-005	9.9113
Bank (with Drive-Through)	51660	16.4600	6.8000e-004	1.4000e-004	16.5189
Day-Care Center	55544.4	17.6976	7.3000e-004	1.5000e-004	17.7610
Gasoline/Service Station	34440	10.9733	4.5000e-004	9.0000e-005	11.0126
Health Club	327180	104.2466	4.3000e-003	8.9000e-004	104.6195
High Turnover (Sit Down Restaurant)	243410	77.5557	3.2000e-003	6.6000e-004	77.8332
Hotel	1.2928e+006	411.9125	0.0170	3.5200e-003	413.3862
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	124600	39.7002	1.6400e-003	3.4000e-004	39.8423
Quality Restaurant	551496	175.7184	7.2500e-003	1.5000e-003	176.3471
Regional Shopping Center	488580	155.6721	6.4300e-003	1.3300e-003	156.2290
User Defined Recreational	91916	29.2864	1.2100e-003	2.5000e-004	29.3912
Total		**1,049.0989**	**0.0433**	**8.9500e-003**	**1,052.8521**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.9693	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419
Unmitigated	0.9693	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1138					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8536					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.8900e-003	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419
Total	**0.9693**	**1.9000e-004**	**0.0203**	**0.0000**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.0393**	**0.0393**	**1.0000e-004**	**0.0000**	**0.0419**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1138					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8536					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.8900e-003	1.9000e-004	0.0203	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0393	0.0393	1.0000e-004	0.0000	0.0419
Total	**0.9693**	**1.9000e-004**	**0.0203**	**0.0000**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.0393**	**0.0393**	**1.0000e-004**	**0.0000**	**0.0419**

7.0 Water Detail

7.1 Mitigation Measures Water

Bedford Marketplace (Operations) - San Bernardino-South Coast County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	110.5764	0.6539	0.0162	131.7601
Unmitigated	110.5764	0.6539	0.0162	131.7601

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	3.13642 / 0.207585	14.7421	0.1028	2.5300e-003	18.0655
Bank (with Drive-Through)	0.237738 / 0.14571	1.5775	7.8100e-003	2.0000e-004	1.8311
Day-Care Center	0.428467 / 1.10177	5.8137	0.0142	3.8000e-004	6.2813
Gasoline/Service Station	0.239074 / 0.146529	1.5864	7.8500e-003	2.0000e-004	1.8414
Health Club	2.24744 / 1.37746	14.9132	0.0738	1.8500e-003	17.3101
High Turnover (Sit Down Restaurant)	1.7696 / 0.112953	8.3029	0.0580	1.4300e-003	10.1779
Hotel	3.42451 / 0.380502	16.6409	0.1122	2.7700e-003	20.2714
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	4.00664 / 0.255743	18.7991	0.1313	3.2300e-003	23.0444
Regional Shopping Center	3.7777 / 2.31536	25.0674	0.1241	3.1100e-003	29.0964
User Defined Recreational	0.667774 / 0.0426239	3.1332	0.0219	5.4000e-004	3.8407
Total		**110.5764**	**0.6539**	**0.0162**	**131.7601**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	3.13642 / 0.207585	14.7421	0.1028	2.5300e-003	18.0655
Bank (with Drive-Through)	0.237738 / 0.14571	1.5775	7.8100e-003	2.0000e-004	1.8311
Day-Care Center	0.428467 / 1.10177	5.8137	0.0142	3.8000e-004	6.2813
Gasoline/Service Station	0.239074 / 0.146529	1.5864	7.8500e-003	2.0000e-004	1.8414
Health Club	2.24744 / 1.37746	14.9132	0.0738	1.8500e-003	17.3101
High Turnover (Sit Down Restaurant)	1.7696 / 0.112953	8.3029	0.0580	1.4300e-003	10.1779
Hotel	3.42451 / 0.380502	16.6409	0.1122	2.7700e-003	20.2714
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	4.00664 / 0.255743	18.7991	0.1313	3.2300e-003	23.0444
Regional Shopping Center	3.7777 / 2.31536	25.0674	0.1241	3.1100e-003	29.0964
User Defined Recreational	0.667774 / 0.0426239	3.1332	0.0219	5.4000e-004	3.8407
Total		**110.5764**	**0.6539**	**0.0162**	**131.7601**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	94.9023	5.6086	0.0000	235.1165
Unmitigated	94.9023	5.6086	0.0000	235.1165

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	13.75	2.7911	0.1650	0.0000	6.9149
Bank (with Drive-Through)	5.6	1.1368	0.0672	0.0000	2.8163
Day-Care Center	12.99	2.6369	0.1558	0.0000	6.5327
Gasoline/Service Station	9.7	1.9690	0.1164	0.0000	4.8781
Health Club	216.6	43.9678	2.5984	0.0000	108.9285
High Turnover (Sit Down Restaurant)	69.38	14.0835	0.8323	0.0000	34.8913
Hotel	73.91	15.0031	0.8867	0.0000	37.1695
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	12.04	2.4440	0.1444	0.0000	6.0549
Regional Shopping Center	53.55	10.8702	0.6424	0.0000	26.9304
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**94.9023**	**5.6086**	**0.0000**	**235.1165**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	13.75	2.7911	0.1650	0.0000	6.9149
Bank (with Drive-Through)	5.6	1.1368	0.0672	0.0000	2.8163
Day-Care Center	12.99	2.6369	0.1558	0.0000	6.5327
Gasoline/Service Station	9.7	1.9690	0.1164	0.0000	4.8781
Health Club	216.6	43.9678	2.5984	0.0000	108.9285
High Turnover (Sit Down Restaurant)	69.38	14.0835	0.8323	0.0000	34.8913
Hotel	73.91	15.0031	0.8867	0.0000	37.1695
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	12.04	2.4440	0.1444	0.0000	6.0549
Regional Shopping Center	53.55	10.8702	0.6424	0.0000	26.9304
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**94.9023**	**5.6086**	**0.0000**	**235.1165**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Bedford Marketplace (Operations)

San Bernardino-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Bank (with Drive-Through)	6.00	1000sqft	0.14	6,000.00	0
Day-Care Center	9.99	1000sqft	0.23	9,990.00	0
Other Asphalt Surfaces	408.85	1000sqft	9.39	408,852.00	0
Parking Lot	890.00	Space	8.17	356,000.00	0
Health Club	38.00	1000sqft	0.87	38,000.00	0
High Turnover (Sit Down Restaurant)	5.83	1000sqft	0.13	5,826.00	0
Hotel	135.00	Room	0.57	88,730.00	0
Quality Restaurant	13.20	1000sqft	0.30	13,200.00	0
User Defined Recreational	2.20	User Defined Unit	0.05	2,200.00	0
Automobile Care Center	3.60	1000sqft	0.08	3,600.00	0
Gasoline/Service Station	18.00	Pump	0.09	4,000.00	0
Regional Shopping Center	51.00	1000sqft	1.17	51,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Net Land Area per the Site Plan is +/-21.2 acres.

Construction Phase - Operations Run Only.

Off-road Equipment - Hours are based on an 8-hour workday.

Off-road Equipment - Operations Run Only.

Trips and VMT - Operations Run Only.

Grading -

Architectural Coating - Rule 1113

Vehicle Trips - Trip Rates based on information provided in the TIA.

Energy Use - Energy rates for User Defined Recreational (Coffee/Shop use) reflect the CalEEMod default rates for Fast-Food Restaurant with Drive Thru.

Water And Wastewater - Water rates adjusted to assume that half of the trips to the car wash will use approximately 30 gallons of water

Solid Waste -

Construction Off-road Equipment Mitigation -

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	3.03	2.12
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	6.62	4.63
tblEnergyUse	LightingElect	5.44	3.81

tblEnergyUse	LightingElect	6.62	4.63
tblEnergyUse	LightingElect	5.61	3.93
tblEnergyUse	LightingElect	0.00	4.63
tblEnergyUse	NT24E	0.00	28.48
tblEnergyUse	NT24NG	0.00	195.77
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	2.78	1.95
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	12.38	8.67
tblEnergyUse	T24E	6.47	4.53
tblEnergyUse	T24E	12.38	8.67
tblEnergyUse	T24E	4.58	3.21
tblEnergyUse	T24E	0.00	8.67
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	6.97	4.88
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	77.67	54.37
tblEnergyUse	T24NG	55.15	38.61
tblEnergyUse	T24NG	77.67	54.37
tblEnergyUse	T24NG	1.92	1.34
tblEnergyUse	T24NG	0.00	54.37
tblLandUse	LandUseSquareFeet	408,850.00	408,852.00
tblLandUse	LandUseSquareFeet	5,830.00	5,826.00

tblLandUse	LandUseSquareFeet	196,020.00	88,730.00
tblLandUse	LandUseSquareFeet	0.00	2,200.00
tblLandUse	LandUseSquareFeet	2,541.15	4,000.00
tblLandUse	LotAcreage	8.01	8.17
tblLandUse	LotAcreage	4.50	0.57
tblLandUse	LotAcreage	0.00	0.05
tblLandUse	LotAcreage	0.06	0.09
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblVehicleEF	HHD	1.24	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	3.46	7.82
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.92	2.4420e-003
tblVehicleEF	HHD	6,983.95	1,459.93
tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.07	7.65
tblVehicleEF	HHD	2.87	3.24
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03

tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004
tblVehicleEF	HHD	0.89	0.60
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	2.4200e-004	6.3700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004
tblVehicleEF	HHD	1.02	0.68
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4200e-004	6.3700e-004
tblVehicleEF	HHD	0.07	1.0000e-006
tblVehicleEF	HHD	1.17	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	2.52	7.65
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.80	2.2950e-003
tblVehicleEF	HHD	7,395.94	1,453.32

tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.97	7.40
tblVehicleEF	HHD	2.70	3.05
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	1.8400e-004	9.0000e-006
tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.84	0.62
tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.7000e-005	0.00
tblVehicleEF	HHD	1.8400e-004	9.0000e-006
tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.97	0.71

tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	1.34	0.03
tblVehicleEF	HHD	0.04	3.7740e-003
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	4.76	7.98
tblVehicleEF	HHD	0.58	0.36
tblVehicleEF	HHD	1.89	2.4140e-003
tblVehicleEF	HHD	6,415.00	1,454.79
tblVehicleEF	HHD	1,493.95	1,371.01
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	26.84	7.90
tblVehicleEF	HHD	2.83	3.15
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.8160e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004

tblVehicleEF	HHD	0.96	0.56
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.08
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.06	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004
tblVehicleEF	HHD	1.10	0.64
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.09
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.07	1.0000e-006
tblVehicleEF	LDA	4.6640e-003	2.7950e-003
tblVehicleEF	LDA	6.4640e-003	0.06
tblVehicleEF	LDA	0.62	0.70
tblVehicleEF	LDA	1.32	2.22
tblVehicleEF	LDA	261.85	269.33
tblVehicleEF	LDA	59.28	55.48
tblVehicleEF	LDA	0.06	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07

tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.6230e-003	2.6640e-003
tblVehicleEF	LDA	6.1500e-004	5.4900e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.10	0.27
tblVehicleEF	LDA	5.3170e-003	3.2030e-003
tblVehicleEF	LDA	5.3900e-003	0.05
tblVehicleEF	LDA	0.76	0.86
tblVehicleEF	LDA	1.10	1.85
tblVehicleEF	LDA	286.52	294.16
tblVehicleEF	LDA	59.28	54.75
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11

tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.07	0.21
tblVehicleEF	LDA	2.8710e-003	2.9100e-003
tblVehicleEF	LDA	6.1100e-004	5.4200e-004
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.08	0.23
tblVehicleEF	LDA	4.5320e-003	2.7260e-003
tblVehicleEF	LDA	6.4200e-003	0.06
tblVehicleEF	LDA	0.58	0.67
tblVehicleEF	LDA	1.30	2.19
tblVehicleEF	LDA	256.02	263.51
tblVehicleEF	LDA	59.28	55.41
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.25

tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.5640e-003	2.6070e-003
tblVehicleEF	LDA	6.1500e-004	5.4800e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.25
tblVehicleEF	LDA	0.09	0.27
tblVehicleEF	LDT1	0.02	8.1890e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.71	1.63
tblVehicleEF	LDT1	4.02	2.54
tblVehicleEF	LDT1	323.73	319.09
tblVehicleEF	LDT1	72.77	67.44
tblVehicleEF	LDT1	0.18	0.15
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.29	0.48
tblVehicleEF	LDT1	3.2600e-003	3.1580e-003

tblVehicleEF	LDT1	7.9900e-004	6.6700e-004
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.06	0.05
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT1	0.02	9.2860e-003
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	2.05	1.97
tblVehicleEF	LDT1	3.30	2.10
tblVehicleEF	LDT1	352.65	345.09
tblVehicleEF	LDT1	72.77	66.47
tblVehicleEF	LDT1	0.16	0.13
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.40	0.44
tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.24	0.41
tblVehicleEF	LDT1	3.5540e-003	3.4150e-003
tblVehicleEF	LDT1	7.8600e-004	6.5800e-004
tblVehicleEF	LDT1	0.40	0.44

tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.06	0.06
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.26	0.44
tblVehicleEF	LDT1	0.01	7.9980e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.62	1.55
tblVehicleEF	LDT1	3.95	2.49
tblVehicleEF	LDT1	316.91	312.93
tblVehicleEF	LDT1	72.77	67.36
tblVehicleEF	LDT1	0.17	0.14
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.28	0.48
tblVehicleEF	LDT1	3.1900e-003	3.0970e-003
tblVehicleEF	LDT1	7.9800e-004	6.6700e-004
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13

tblVehicleEF	LDT1	0.05	0.05
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT2	6.9330e-003	4.8260e-003
tblVehicleEF	LDT2	9.2890e-003	0.08
tblVehicleEF	LDT2	0.85	1.06
tblVehicleEF	LDT2	1.85	2.89
tblVehicleEF	LDT2	363.70	344.02
tblVehicleEF	LDT2	81.97	72.94
tblVehicleEF	LDT2	0.10	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.13	0.38
tblVehicleEF	LDT2	3.6440e-003	3.4040e-003
tblVehicleEF	LDT2	8.5100e-004	7.2200e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50

tblVehicleEF	LDT2	0.14	0.42
tblVehicleEF	LDT2	7.8730e-003	5.5090e-003
tblVehicleEF	LDT2	7.7350e-003	0.07
tblVehicleEF	LDT2	1.04	1.30
tblVehicleEF	LDT2	1.53	2.39
tblVehicleEF	LDT2	397.09	369.57
tblVehicleEF	LDT2	81.97	71.94
tblVehicleEF	LDT2	0.09	0.09
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	3.9810e-003	3.6570e-003
tblVehicleEF	LDT2	8.4600e-004	7.1200e-004
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.11	0.35
tblVehicleEF	LDT2	6.7430e-003	4.7100e-003

tblVehicleEF	LDT2	9.2200e-003	0.08
tblVehicleEF	LDT2	0.81	1.01
tblVehicleEF	LDT2	1.82	2.84
tblVehicleEF	LDT2	355.82	337.97
tblVehicleEF	LDT2	81.97	72.85
tblVehicleEF	LDT2	0.09	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.58
tblVehicleEF	LDT2	0.12	0.38
tblVehicleEF	LDT2	3.5650e-003	3.3440e-003
tblVehicleEF	LDT2	8.5100e-004	7.2100e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.08	0.58
tblVehicleEF	LDT2	0.14	0.41
tblVehicleEF	LHD1	5.4860e-003	4.9840e-003
tblVehicleEF	LHD1	0.01	7.1410e-003
tblVehicleEF	LHD1	0.02	0.02

tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.77	1.07
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.99
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.26	1.69
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.29	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6200e-004	1.0900e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003

tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD1	5.4860e-003	5.0000e-003
tblVehicleEF	LHD1	0.01	7.3180e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.18	0.99
tblVehicleEF	LHD1	2.58	1.00
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.98
tblVehicleEF	LHD1	30.92	10.87
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.12	1.58
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11

tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.27	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0370e-003	6.3960e-003
tblVehicleEF	LHD1	3.5800e-004	1.0800e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.30	0.09
tblVehicleEF	LHD1	5.4860e-003	4.9870e-003
tblVehicleEF	LHD1	0.01	7.1590e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.72	1.05
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.96
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.22	1.66
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004

tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6100e-004	1.0800e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD2	3.8190e-003	3.4060e-003
tblVehicleEF	LHD2	5.2410e-003	4.5240e-003
tblVehicleEF	LHD2	9.1660e-003	0.01

tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.29	0.64
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.51
tblVehicleEF	LHD2	24.89	7.96
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.69	1.81
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7300e-004	7.9000e-005
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05

tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.14	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4160e-003
tblVehicleEF	LHD2	5.3190e-003	4.5750e-003
tblVehicleEF	LHD2	8.7380e-003	9.6870e-003
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.56	0.62
tblVehicleEF	LHD2	1.21	0.60
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.89
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.59	1.70
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02

tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7100e-004	7.8000e-005
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4070e-003
tblVehicleEF	LHD2	5.2490e-003	4.5300e-003
tblVehicleEF	LHD2	9.0820e-003	0.01
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.27	0.63
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.94
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.67	1.78
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01

tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7200e-004	7.9000e-005
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.16	0.25
tblVehicleEF	MCY	21.02	21.16
tblVehicleEF	MCY	9.91	8.77
tblVehicleEF	MCY	167.12	211.16
tblVehicleEF	MCY	46.87	61.87

tblVehicleEF	MCY	1.17	1.17
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84
tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.26	2.26
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.17	1.92
tblVehicleEF	MCY	2.0790e-003	2.0900e-003
tblVehicleEF	MCY	6.9500e-004	6.1200e-004
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84
tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.76	2.76
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.37	2.08
tblVehicleEF	MCY	0.41	0.32
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	21.14	21.29
tblVehicleEF	MCY	9.06	7.97
tblVehicleEF	MCY	167.12	211.14
tblVehicleEF	MCY	46.87	59.68
tblVehicleEF	MCY	0.99	0.99
tblVehicleEF	MCY	1.8190e-003	1.7890e-003

tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.19	2.19
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	1.87	1.64
tblVehicleEF	MCY	2.0790e-003	2.0890e-003
tblVehicleEF	MCY	6.7100e-004	5.9100e-004
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.69	2.68
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.03	1.78
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	20.06	20.18
tblVehicleEF	MCY	9.53	8.41
tblVehicleEF	MCY	167.12	209.47
tblVehicleEF	MCY	46.87	61.06
tblVehicleEF	MCY	1.13	1.13
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003

tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.22	2.22
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.10	1.84
tblVehicleEF	MCY	2.0630e-003	2.0730e-003
tblVehicleEF	MCY	6.8600e-004	6.0400e-004
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.71	2.71
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.28	2.00
tblVehicleEF	MDV	0.01	6.6050e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.55	1.33
tblVehicleEF	MDV	3.59	3.53
tblVehicleEF	MDV	498.66	425.70
tblVehicleEF	MDV	110.76	90.07
tblVehicleEF	MDV	0.20	0.14
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12

tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.28	0.50
tblVehicleEF	MDV	5.0000e-003	4.2090e-003
tblVehicleEF	MDV	1.1710e-003	8.9100e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MDV	0.02	7.4780e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.87	1.60
tblVehicleEF	MDV	2.99	2.92
tblVehicleEF	MDV	542.90	452.84
tblVehicleEF	MDV	110.76	88.84
tblVehicleEF	MDV	0.18	0.12
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22

tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.24	0.42
tblVehicleEF	MDV	5.4470e-003	4.4780e-003
tblVehicleEF	MDV	1.1600e-003	8.7900e-004
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22
tblVehicleEF	MDV	0.06	0.05
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.26	0.46
tblVehicleEF	MDV	0.01	6.4310e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.47	1.25
tblVehicleEF	MDV	3.53	3.47
tblVehicleEF	MDV	488.33	419.25
tblVehicleEF	MDV	110.76	89.97
tblVehicleEF	MDV	0.19	0.13
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.13	0.61

tblVehicleEF	MDV	0.28	0.49
tblVehicleEF	MDV	4.8960e-003	4.1450e-003
tblVehicleEF	MDV	1.1700e-003	8.9000e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.13	0.61
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.60	0.37
tblVehicleEF	MH	6.96	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.64	4.70
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00

tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.2000e-004	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.44	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.74	0.37
tblVehicleEF	MH	6.31	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.50	4.42
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00

tblVehicleEF	MH	0.37	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.0900e-004	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.41	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.61	0.37
tblVehicleEF	MH	6.87	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.61	4.62
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00

tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.1900e-004	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.43	0.00
tblVehicleEF	MHD	0.02	3.2250e-003
tblVehicleEF	MHD	4.1450e-003	6.0340e-003
tblVehicleEF	MHD	0.06	8.8310e-003
tblVehicleEF	MHD	0.33	0.34
tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	6.00	1.03
tblVehicleEF	MHD	155.10	71.06
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.43
tblVehicleEF	MHD	0.63	0.61
tblVehicleEF	MHD	1.08	2.22
tblVehicleEF	MHD	4.3700e-004	2.0190e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	4.1800e-004	1.9320e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004

tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.11
tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.4910e-003	6.7400e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4400e-004	8.3000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.11
tblVehicleEF	MHD	0.40	0.05
tblVehicleEF	MHD	0.02	3.0610e-003
tblVehicleEF	MHD	4.2290e-003	6.0860e-003
tblVehicleEF	MHD	0.05	8.4200e-003
tblVehicleEF	MHD	0.24	0.28
tblVehicleEF	MHD	0.32	0.56
tblVehicleEF	MHD	5.61	0.96
tblVehicleEF	MHD	164.29	72.29
tblVehicleEF	MHD	1,105.72	1,029.54
tblVehicleEF	MHD	53.92	8.32
tblVehicleEF	MHD	0.65	0.62
tblVehicleEF	MHD	1.01	2.09

tblVehicleEF	MHD	3.6900e-004	1.7050e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	3.5300e-004	1.6310e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.35	0.04
tblVehicleEF	MHD	1.5770e-003	6.8600e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.3800e-004	8.2000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.38	0.05
tblVehicleEF	MHD	0.02	3.4660e-003
tblVehicleEF	MHD	4.1530e-003	6.0380e-003
tblVehicleEF	MHD	0.06	8.7320e-003
tblVehicleEF	MHD	0.46	0.42

tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	5.90	1.02
tblVehicleEF	MHD	142.41	69.34
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.40
tblVehicleEF	MHD	0.60	0.60
tblVehicleEF	MHD	1.06	2.18
tblVehicleEF	MHD	5.3200e-004	2.4540e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	5.0900e-004	2.3480e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	7.0500e-004	3.2200e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.13
tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.3710e-003	6.5800e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4300e-004	8.3000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	7.0500e-004	3.2200e-004

tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.13
tblVehicleEF	MHD	0.39	0.05
tblVehicleEF	OBUS	0.01	9.3650e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.27	0.49
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.67	2.81
tblVehicleEF	OBUS	70.21	68.33
tblVehicleEF	OBUS	1,126.32	1,507.23
tblVehicleEF	OBUS	71.08	22.19
tblVehicleEF	OBUS	0.32	0.39
tblVehicleEF	OBUS	1.10	1.47
tblVehicleEF	OBUS	1.1300e-004	1.5090e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.0800e-004	1.4440e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.41	0.13

tblVehicleEF	OBUS	6.8200e-004	6.5300e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2800e-004	2.2000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	OBUS	0.01	9.3930e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.26	0.47
tblVehicleEF	OBUS	0.75	1.22
tblVehicleEF	OBUS	6.11	2.57
tblVehicleEF	OBUS	73.34	68.71
tblVehicleEF	OBUS	1,126.32	1,507.28
tblVehicleEF	OBUS	71.08	21.80
tblVehicleEF	OBUS	0.33	0.39
tblVehicleEF	OBUS	1.02	1.35
tblVehicleEF	OBUS	9.5000e-005	1.2750e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	9.1000e-005	1.2200e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004

tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.05	0.09
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.39	0.13
tblVehicleEF	OBUS	7.1200e-004	6.5600e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.1800e-004	2.1600e-004
tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.07	0.11
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.42	0.14
tblVehicleEF	OBUS	0.01	9.3640e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.28	0.51
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.62	2.79
tblVehicleEF	OBUS	65.88	67.80
tblVehicleEF	OBUS	1,126.32	1,507.24
tblVehicleEF	OBUS	71.08	22.15
tblVehicleEF	OBUS	0.31	0.39

tblVehicleEF	OBUS	1.08	1.44
tblVehicleEF	OBUS	1.3700e-004	1.8320e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.3100e-004	1.7520e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.41	0.13
tblVehicleEF	OBUS	6.4100e-004	6.4800e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2700e-004	2.1900e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3980e-003
tblVehicleEF	SBUS	0.07	3.9120e-003

tblVehicleEF	SBUS	5.64	1.82
tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.49	0.54
tblVehicleEF	SBUS	1,270.71	336.96
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.11
tblVehicleEF	SBUS	12.46	3.45
tblVehicleEF	SBUS	5.17	5.36
tblVehicleEF	SBUS	0.01	4.4720e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	4.2790e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004
tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.68	0.19
tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.28	0.02
tblVehicleEF	SBUS	0.01	3.2020e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004

tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.31	0.02
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.4900e-003
tblVehicleEF	SBUS	0.06	3.2450e-003
tblVehicleEF	SBUS	5.48	1.78
tblVehicleEF	SBUS	0.72	0.64
tblVehicleEF	SBUS	3.76	0.38
tblVehicleEF	SBUS	1,335.64	345.46
tblVehicleEF	SBUS	1,144.20	1,143.58
tblVehicleEF	SBUS	36.06	2.85
tblVehicleEF	SBUS	12.86	3.52
tblVehicleEF	SBUS	4.84	5.03
tblVehicleEF	SBUS	0.01	3.7780e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	3.6140e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003

tblVehicleEF	SBUS	0.67	0.19
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.23	0.02
tblVehicleEF	SBUS	0.01	3.2820e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.2700e-004	2.8000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003
tblVehicleEF	SBUS	0.96	0.27
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.25	0.02
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3930e-003
tblVehicleEF	SBUS	0.07	4.0100e-003
tblVehicleEF	SBUS	5.85	1.87
tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.54	0.56
tblVehicleEF	SBUS	1,181.05	325.23
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.14
tblVehicleEF	SBUS	11.91	3.35
tblVehicleEF	SBUS	5.09	5.28
tblVehicleEF	SBUS	0.02	5.4310e-003

tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.02	5.1960e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003
tblVehicleEF	SBUS	0.68	0.19
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.29	0.02
tblVehicleEF	SBUS	0.01	3.0910e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003
tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.32	0.03
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.79	32.64

tblVehicleEF	UBUS	14.93	1.46
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.41
tblVehicleEF	UBUS	6.43	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004
tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.19	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.6230e-003	1.7200e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004
tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.30	0.08
tblVehicleEF	UBUS	1.95	4.19

tblVehicleEF	UBUS	0.08	0.02
tblVehicleEF	UBUS	9.90	32.64
tblVehicleEF	UBUS	12.23	1.20
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	16.98
tblVehicleEF	UBUS	5.98	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	0.02	3.2040e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	0.67	0.06
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.06	0.06
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.5760e-003	1.6800e-004
tblVehicleEF	UBUS	0.02	3.2040e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	2.69	4.28
tblVehicleEF	UBUS	0.02	0.05

tblVehicleEF	UBUS	1.16	0.07
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.80	32.64
tblVehicleEF	UBUS	14.43	1.42
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.36
tblVehicleEF	UBUS	6.31	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004
tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.17	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.6140e-003	1.7200e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004

tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.28	0.08
tblVehicleTrips	CC_TTP	0.00	79.50
tblVehicleTrips	CNW_TTP	0.00	19.00
tblVehicleTrips	CW_TTP	0.00	1.50
tblVehicleTrips	DV_TP	51.00	0.00
tblVehicleTrips	DV_TP	26.00	0.00
tblVehicleTrips	DV_TP	58.00	0.00
tblVehicleTrips	DV_TP	27.00	0.00
tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	DV_TP	20.00	0.00
tblVehicleTrips	DV_TP	18.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	PB_TP	28.00	86.00
tblVehicleTrips	PB_TP	47.00	65.00
tblVehicleTrips	PB_TP	14.00	58.00
tblVehicleTrips	PB_TP	59.00	85.00
tblVehicleTrips	PB_TP	9.00	45.00
tblVehicleTrips	PB_TP	43.00	88.00
tblVehicleTrips	PB_TP	44.00	73.00
tblVehicleTrips	PB_TP	11.00	63.00
tblVehicleTrips	PB_TP	0.00	54.00
tblVehicleTrips	PR_TP	21.00	14.00
tblVehicleTrips	PR_TP	27.00	35.00
tblVehicleTrips	PR_TP	28.00	42.00
tblVehicleTrips	PR_TP	14.00	15.00

tblVehicleTrips	PR_TP	52.00	55.00
tblVehicleTrips	PR_TP	37.00	12.00
tblVehicleTrips	PR_TP	38.00	27.00
tblVehicleTrips	PR_TP	54.00	37.00
tblVehicleTrips	PR_TP	0.00	46.00
tblVehicleTrips	ST_TR	23.72	304.00
tblVehicleTrips	ST_TR	6.21	6.22
tblVehicleTrips	ST_TR	168.56	182.17
tblVehicleTrips	ST_TR	158.37	122.40
tblVehicleTrips	ST_TR	8.19	10.50
tblVehicleTrips	ST_TR	94.36	90.04
tblVehicleTrips	ST_TR	49.97	46.12
tblVehicleTrips	ST_TR	0.00	87.70
tblVehicleTrips	SU_TR	11.88	410.00
tblVehicleTrips	SU_TR	5.83	5.84
tblVehicleTrips	SU_TR	168.56	166.88
tblVehicleTrips	SU_TR	131.84	142.64
tblVehicleTrips	SU_TR	5.95	8.48
tblVehicleTrips	SU_TR	72.16	71.97
tblVehicleTrips	SU_TR	25.24	21.10
tblVehicleTrips	SU_TR	0.00	87.70
tblVehicleTrips	WD_TR	23.72	142.00
tblVehicleTrips	WD_TR	148.15	79.67
tblVehicleTrips	WD_TR	74.06	47.62
tblVehicleTrips	WD_TR	168.56	172.01
tblVehicleTrips	WD_TR	32.93	30.00
tblVehicleTrips	WD_TR	127.15	112.18

tblVehicleTrips	WD_TR	8.17	12.23
tblVehicleTrips	WD_TR	89.95	83.84
tblVehicleTrips	WD_TR	42.70	37.75
tblVehicleTrips	WD_TR	0.00	820.38
tblWater	IndoorWaterUseRate	338,691.99	3,136,416.99
tblWater	IndoorWaterUseRate	0.00	667,774.17
tblWater	OutdoorWaterUseRate	0.00	42,623.88

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Energy	0.3178	2.8889	2.4267	0.0173		0.2196	0.2196		0.2196	0.2196		3,466.7030	3,466.7030	0.0665	0.0636	3,487.3039
Mobile	39.8675	104.0039	203.9107	0.4658	35.8772	0.7341	36.6113	9.5892	0.6949	10.2841		48,227.3977	48,227.3977	3.5173		48,315.3289
Total	**45.5012**	**106.8943**	**206.4995**	**0.4832**	**35.8772**	**0.9543**	**36.8315**	**9.5892**	**0.9150**	**10.5042**		**51,694.4468**	**51,694.4468**	**3.5846**	**0.0636**	**51,803.0019**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Energy	0.3178	2.8889	2.4267	0.0173		0.2196	0.2196		0.2196	0.2196		3,466.7030	3,466.7030	0.0665	0.0636	3,487.3039
Mobile	39.8675	104.0039	203.9107	0.4658	35.8772	0.7341	36.6113	9.5892	0.6949	10.2841		48,227.3977	48,227.3977	3.5173		48,315.3289
Total	**45.5012**	**106.8943**	**206.4995**	**0.4832**	**35.8772**	**0.9543**	**36.8315**	**9.5892**	**0.9150**	**10.5042**		**51,694.4468**	**51,694.4468**	**3.5846**	**0.0636**	**51,803.0019**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/25/2020	6/25/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 17.56

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.2 Site Preparation - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	39.8675	104.0039	203.9107	0.4658	35.8772	0.7341	36.6113	9.5892	0.6949	10.2841		48,227.3977	48,227.3977	3.5173		48,315.3289
Unmitigated	39.8675	104.0039	203.9107	0.4658	35.8772	0.7341	36.6113	9.5892	0.6949	10.2841		48,227.3977	48,227.3977	3.5173		48,315.3289

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	511.20	1,094.40	1476.00	426,767	426,767
Bank (with Drive-Through)	478.02	517.92	191.40	498,767	498,767
Day-Care Center	475.72	62.14	58.34	518,758	518,758
Gasoline/Service Station	3,096.18	3,279.06	3003.84	1,501,619	1,501,619
Health Club	1,140.00	793.06	1015.74	2,057,883	2,057,883
High Turnover (Sit Down Restaurant)	654.01	713.59	831.59	286,809	286,809
Hotel	1,651.05	1,417.50	1144.80	3,687,504	3,687,504
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Quality Restaurant	1,106.69	1,188.53	950.00	1,009,217	1,009,217
Regional Shopping Center	1,925.25	2,352.12	1076.10	2,416,706	2,416,706
User Defined Recreational	1,804.84	192.94	192.94	1,880,704	1,880,704
Total	12,842.96	11,611.26	9,940.76	14,284,735	14,284,735

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	16.60	8.40	6.90	33.00	48.00	19.00	14	0	86
Bank (with Drive-Through)	16.60	8.40	6.90	6.60	74.40	19.00	35	0	65
Day-Care Center	16.60	8.40	6.90	12.70	82.30	5.00	42	0	58
Gasoline/Service Station	16.60	8.40	6.90	2.00	79.00	19.00	15	0	85
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	55	0	45
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	12	0	88
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	27	0	73
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	37	0	63
User Defined Recreational	16.60	8.40	6.90	1.50	79.50	19.00	46	0	54

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Bank (with Drive-Through)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Day-Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Gasoline/Service Station	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Health Club	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
High Turnover (Sit Down Restaurant)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Hotel	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Other Asphalt Surfaces	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Parking Lot	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Quality Restaurant	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Regional Shopping Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
User Defined Recreational	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Bedford Marketplace (Operations) - San Bernardino-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.3178	2.8889	2.4267	0.0173		0.2196	0.2196		0.2196	0.2196		3,466.7030	3,466.7030	0.0665	0.0636	3,487.3039
NaturalGas Unmitigated	0.3178	2.8889	2.4267	0.0173		0.2196	0.2196		0.2196	0.2196		3,466.7030	3,466.7030	0.0665	0.0636	3,487.3039

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	274.981	2.9700e-003	0.0270	0.0227	1.6000e-004		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003		32.3507	32.3507	6.2000e-004	5.9000e-004	32.5429
Bank (with Drive-Through)	458.301	4.9400e-003	0.0449	0.0377	2.7000e-004		3.4100e-003	3.4100e-003		3.4100e-003	3.4100e-003		53.9178	53.9178	1.0300e-003	9.9000e-004	54.2382
Day-Care Center	182.557	1.9700e-003	0.0179	0.0150	1.1000e-004		1.3600e-003	1.3600e-003		1.3600e-003	1.3600e-003		21.4773	21.4773	4.1000e-004	3.9000e-004	21.6049
Gasoline/Service Station	305.534	3.2900e-003	0.0300	0.0252	1.8000e-004		2.2800e-003	2.2800e-003		2.2800e-003	2.2800e-003		35.9452	35.9452	6.9000e-004	6.6000e-004	36.1588
Health Club	2902.58	0.0313	0.2846	0.2390	1.7100e-003		0.0216	0.0216		0.0216	0.0216		341.4795	341.4795	6.5500e-003	6.2600e-003	343.5087
High Turnover (Sit Down Restaurant)	3992.65	0.0431	0.3914	0.3288	2.3500e-003		0.0298	0.0298		0.0298	0.0298		469.7230	469.7230	9.0000e-003	8.6100e-003	472.5143
Hotel	10567.4	0.1140	1.0360	0.8703	6.2200e-003		0.0787	0.0787		0.0787	0.0787		1,243.2210	1,243.2210	0.0238	0.0228	1,250.6088
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	9046.16	0.0976	0.8869	0.7450	5.3200e-003		0.0674	0.0674		0.0674	0.0674		1,064.2540	1,064.2540	0.0204	0.0195	1,070.5783
Regional Shopping Center	229.151	2.4700e-003	0.0225	0.0189	1.3000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003		26.9589	26.9589	5.2000e-004	4.9000e-004	27.1191
User Defined Recreational	1507.69	0.0163	0.1478	0.1242	8.9000e-004		0.0112	0.0112		0.0112	0.0112		177.3757	177.3757	3.4000e-003	3.2500e-003	178.4297
Total		**0.3178**	**2.8889**	**2.4267**	**0.0173**		**0.2196**	**0.2196**		**0.2196**	**0.2196**		**3,466.7030**	**3,466.7030**	**0.0665**	**0.0635**	**3,487.3039**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	0.274981	2.9700e-003	0.0270	0.0227	1.6000e-004		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003		32.3507	32.3507	6.2000e-004	5.9000e-004	32.5429
Bank (with Drive-Through)	0.458301	4.9400e-003	0.0449	0.0377	2.7000e-004		3.4100e-003	3.4100e-003		3.4100e-003	3.4100e-003		53.9178	53.9178	1.0300e-003	9.9000e-004	54.2382
Day-Care Center	0.182557	1.9700e-003	0.0179	0.0150	1.1000e-004		1.3600e-003	1.3600e-003		1.3600e-003	1.3600e-003		21.4773	21.4773	4.1000e-004	3.9000e-004	21.6049
Gasoline/Service Station	0.305534	3.2900e-003	0.0300	0.0252	1.8000e-004		2.2800e-003	2.2800e-003		2.2800e-003	2.2800e-003		35.9452	35.9452	6.9000e-004	6.6000e-004	36.1588
Health Club	2.90258	0.0313	0.2846	0.2390	1.7100e-003		0.0216	0.0216		0.0216	0.0216		341.4795	341.4795	6.5500e-003	6.2600e-003	343.5087
High Turnover (Sit Down Restaurant)	3.99265	0.0431	0.3914	0.3288	2.3500e-003		0.0298	0.0298		0.0298	0.0298		469.7230	469.7230	9.0000e-003	8.6100e-003	472.5143
Hotel	10.5674	0.1140	1.0360	0.8703	6.2200e-003		0.0787	0.0787		0.0787	0.0787		1,243.2210	1,243.2210	0.0238	0.0228	1,250.6088
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	9.04616	0.0976	0.8869	0.7450	5.3200e-003		0.0674	0.0674		0.0674	0.0674		1,064.2540	1,064.2540	0.0204	0.0195	1,070.5783
Regional Shopping Center	0.229151	2.4700e-003	0.0225	0.0189	1.3000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003		26.9589	26.9589	5.2000e-004	4.9000e-004	27.1191
User Defined Recreational	1.50769	0.0163	0.1478	0.1242	8.9000e-004		0.0112	0.0112		0.0112	0.0112		177.3757	177.3757	3.4000e-003	3.2500e-003	178.4297
Total		**0.3178**	**2.8889**	**2.4267**	**0.0173**		**0.2196**	**0.2196**		**0.2196**	**0.2196**		**3,466.7030**	**3,466.7030**	**0.0665**	**0.0635**	**3,487.3039**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Unmitigated	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.6235					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.6773					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0151	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Total	**5.3159**	**1.4900e-003**	**0.1621**	**1.0000e-005**		**5.8000e-004**	**5.8000e-004**		**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**		**0.3691**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.6235					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.6773					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0151	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Total	**5.3159**	**1.4900e-003**	**0.1621**	**1.0000e-005**		**5.8000e-004**	**5.8000e-004**		**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**		**0.3691**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Bedford Marketplace (Operations)

San Bernardino-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Bank (with Drive-Through)	6.00	1000sqft	0.14	6,000.00	0
Day-Care Center	9.99	1000sqft	0.23	9,990.00	0
Other Asphalt Surfaces	408.85	1000sqft	9.39	408,852.00	0
Parking Lot	890.00	Space	8.17	356,000.00	0
Health Club	38.00	1000sqft	0.87	38,000.00	0
High Turnover (Sit Down Restaurant)	5.83	1000sqft	0.13	5,826.00	0
Hotel	135.00	Room	0.57	88,730.00	0
Quality Restaurant	13.20	1000sqft	0.30	13,200.00	0
User Defined Recreational	2.20	User Defined Unit	0.05	2,200.00	0
Automobile Care Center	3.60	1000sqft	0.08	3,600.00	0
Gasoline/Service Station	18.00	Pump	0.09	4,000.00	0
Regional Shopping Center	51.00	1000sqft	1.17	51,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Net Land Area per the Site Plan is +/-21.2 acres.

Construction Phase - Operations Run Only.

Off-road Equipment - Hours are based on an 8-hour workday.

Off-road Equipment - Operations Run Only.

Trips and VMT - Operations Run Only.

Grading -

Architectural Coating - Rule 1113

Vehicle Trips - Trip Rates based on information provided in the TIA.

Energy Use - Energy rates for User Defined Recreational (Coffee/Shop use) reflect the CalEEMod default rates for Fast-Food Restaurant with Drive Thru.

Water And Wastewater - Water rates adjusted to assume that half of the trips to the car wash will use approximately 30 gallons of water

Solid Waste -

Construction Off-road Equipment Mitigation -

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	3.03	2.12
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	2.93	2.05
tblEnergyUse	LightingElect	6.62	4.63
tblEnergyUse	LightingElect	5.44	3.81

tblEnergyUse	LightingElect	6.62	4.63
tblEnergyUse	LightingElect	5.61	3.93
tblEnergyUse	LightingElect	0.00	4.63
tblEnergyUse	NT24E	0.00	28.48
tblEnergyUse	NT24NG	0.00	195.77
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	2.78	1.95
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	2.20	1.54
tblEnergyUse	T24E	12.38	8.67
tblEnergyUse	T24E	6.47	4.53
tblEnergyUse	T24E	12.38	8.67
tblEnergyUse	T24E	4.58	3.21
tblEnergyUse	T24E	0.00	8.67
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	6.97	4.88
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	15.36	10.75
tblEnergyUse	T24NG	77.67	54.37
tblEnergyUse	T24NG	55.15	38.61
tblEnergyUse	T24NG	77.67	54.37
tblEnergyUse	T24NG	1.92	1.34
tblEnergyUse	T24NG	0.00	54.37
tblLandUse	LandUseSquareFeet	408,850.00	408,852.00
tblLandUse	LandUseSquareFeet	5,830.00	5,826.00

tblLandUse	LandUseSquareFeet	196,020.00	88,730.00
tblLandUse	LandUseSquareFeet	0.00	2,200.00
tblLandUse	LandUseSquareFeet	2,541.15	4,000.00
tblLandUse	LotAcreage	8.01	8.17
tblLandUse	LotAcreage	4.50	0.57
tblLandUse	LotAcreage	0.00	0.05
tblLandUse	LotAcreage	0.06	0.09
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblVehicleEF	HHD	1.24	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	3.46	7.82
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.92	2.4420e-003
tblVehicleEF	HHD	6,983.95	1,459.93
tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.07	7.65
tblVehicleEF	HHD	2.87	3.24
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03

tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004
tblVehicleEF	HHD	0.89	0.60
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	2.4200e-004	6.3700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.3000e-005	4.0000e-006
tblVehicleEF	HHD	3.4490e-003	1.2600e-004
tblVehicleEF	HHD	1.02	0.68
tblVehicleEF	HHD	5.7000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4200e-004	6.3700e-004
tblVehicleEF	HHD	0.07	1.0000e-006
tblVehicleEF	HHD	1.17	0.03
tblVehicleEF	HHD	0.04	0.06
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	2.52	7.65
tblVehicleEF	HHD	0.58	0.51
tblVehicleEF	HHD	1.80	2.2950e-003
tblVehicleEF	HHD	7,395.94	1,453.32

tblVehicleEF	HHD	1,493.95	1,411.06
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	28.97	7.40
tblVehicleEF	HHD	2.70	3.05
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.9170e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	1.8400e-004	9.0000e-006
tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.84	0.62
tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.07	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.7000e-005	0.00
tblVehicleEF	HHD	1.8400e-004	9.0000e-006
tblVehicleEF	HHD	3.9090e-003	1.4800e-004
tblVehicleEF	HHD	0.97	0.71

tblVehicleEF	HHD	1.2900e-004	6.0000e-006
tblVehicleEF	HHD	0.13	0.16
tblVehicleEF	HHD	2.4800e-004	6.5700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	1.34	0.03
tblVehicleEF	HHD	0.04	3.7740e-003
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	4.76	7.98
tblVehicleEF	HHD	0.58	0.36
tblVehicleEF	HHD	1.89	2.4140e-003
tblVehicleEF	HHD	6,415.00	1,454.79
tblVehicleEF	HHD	1,493.95	1,371.01
tblVehicleEF	HHD	5.71	0.02
tblVehicleEF	HHD	26.84	7.90
tblVehicleEF	HHD	2.83	3.15
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.5000e-005	1.0000e-006
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8820e-003	8.8160e-003
tblVehicleEF	HHD	0.01	0.05
tblVehicleEF	HHD	5.0000e-005	1.0000e-006
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004

tblVehicleEF	HHD	0.96	0.56
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.09	0.08
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	0.06	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	9.4000e-005	4.0000e-006
tblVehicleEF	HHD	3.7830e-003	1.4900e-004
tblVehicleEF	HHD	1.10	0.64
tblVehicleEF	HHD	5.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.13	0.09
tblVehicleEF	HHD	2.5900e-004	6.6600e-004
tblVehicleEF	HHD	0.07	1.0000e-006
tblVehicleEF	LDA	4.6640e-003	2.7950e-003
tblVehicleEF	LDA	6.4640e-003	0.06
tblVehicleEF	LDA	0.62	0.70
tblVehicleEF	LDA	1.32	2.22
tblVehicleEF	LDA	261.85	269.33
tblVehicleEF	LDA	59.28	55.48
tblVehicleEF	LDA	0.06	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07

tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.6230e-003	2.6640e-003
tblVehicleEF	LDA	6.1500e-004	5.4900e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.10	0.27
tblVehicleEF	LDA	5.3170e-003	3.2030e-003
tblVehicleEF	LDA	5.3900e-003	0.05
tblVehicleEF	LDA	0.76	0.86
tblVehicleEF	LDA	1.10	1.85
tblVehicleEF	LDA	286.52	294.16
tblVehicleEF	LDA	59.28	54.75
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11

tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.07	0.21
tblVehicleEF	LDA	2.8710e-003	2.9100e-003
tblVehicleEF	LDA	6.1100e-004	5.4200e-004
tblVehicleEF	LDA	0.10	0.14
tblVehicleEF	LDA	0.13	0.13
tblVehicleEF	LDA	0.08	0.11
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.08	0.23
tblVehicleEF	LDA	4.5320e-003	2.7260e-003
tblVehicleEF	LDA	6.4200e-003	0.06
tblVehicleEF	LDA	0.58	0.67
tblVehicleEF	LDA	1.30	2.19
tblVehicleEF	LDA	256.02	263.51
tblVehicleEF	LDA	59.28	55.41
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	1.7130e-003	1.5260e-003
tblVehicleEF	LDA	2.3020e-003	1.9470e-003
tblVehicleEF	LDA	1.5790e-003	1.4050e-003
tblVehicleEF	LDA	2.1170e-003	1.7910e-003
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.25

tblVehicleEF	LDA	0.09	0.25
tblVehicleEF	LDA	2.5640e-003	2.6070e-003
tblVehicleEF	LDA	6.1500e-004	5.4800e-004
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.12	0.12
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.25
tblVehicleEF	LDA	0.09	0.27
tblVehicleEF	LDT1	0.02	8.1890e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.71	1.63
tblVehicleEF	LDT1	4.02	2.54
tblVehicleEF	LDT1	323.73	319.09
tblVehicleEF	LDT1	72.77	67.44
tblVehicleEF	LDT1	0.18	0.15
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.29	0.48
tblVehicleEF	LDT1	3.2600e-003	3.1580e-003

tblVehicleEF	LDT1	7.9900e-004	6.6700e-004
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.36	0.29
tblVehicleEF	LDT1	0.13	0.15
tblVehicleEF	LDT1	0.06	0.05
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT1	0.02	9.2860e-003
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	2.05	1.97
tblVehicleEF	LDT1	3.30	2.10
tblVehicleEF	LDT1	352.65	345.09
tblVehicleEF	LDT1	72.77	66.47
tblVehicleEF	LDT1	0.16	0.13
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.40	0.44
tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.24	0.41
tblVehicleEF	LDT1	3.5540e-003	3.4150e-003
tblVehicleEF	LDT1	7.8600e-004	6.5800e-004
tblVehicleEF	LDT1	0.40	0.44

tblVehicleEF	LDT1	0.44	0.36
tblVehicleEF	LDT1	0.29	0.32
tblVehicleEF	LDT1	0.06	0.06
tblVehicleEF	LDT1	0.21	0.95
tblVehicleEF	LDT1	0.26	0.44
tblVehicleEF	LDT1	0.01	7.9980e-003
tblVehicleEF	LDT1	0.02	0.09
tblVehicleEF	LDT1	1.62	1.55
tblVehicleEF	LDT1	3.95	2.49
tblVehicleEF	LDT1	316.91	312.93
tblVehicleEF	LDT1	72.77	67.36
tblVehicleEF	LDT1	0.17	0.14
tblVehicleEF	LDT1	2.8630e-003	2.4040e-003
tblVehicleEF	LDT1	3.8930e-003	3.0870e-003
tblVehicleEF	LDT1	2.6370e-003	2.2130e-003
tblVehicleEF	LDT1	3.5800e-003	2.8380e-003
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.28	0.48
tblVehicleEF	LDT1	3.1900e-003	3.0970e-003
tblVehicleEF	LDT1	7.9800e-004	6.6700e-004
tblVehicleEF	LDT1	0.20	0.22
tblVehicleEF	LDT1	0.41	0.33
tblVehicleEF	LDT1	0.12	0.13

tblVehicleEF	LDT1	0.05	0.05
tblVehicleEF	LDT1	0.25	1.12
tblVehicleEF	LDT1	0.31	0.53
tblVehicleEF	LDT2	6.9330e-003	4.8260e-003
tblVehicleEF	LDT2	9.2890e-003	0.08
tblVehicleEF	LDT2	0.85	1.06
tblVehicleEF	LDT2	1.85	2.89
tblVehicleEF	LDT2	363.70	344.02
tblVehicleEF	LDT2	81.97	72.94
tblVehicleEF	LDT2	0.10	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.13	0.38
tblVehicleEF	LDT2	3.6440e-003	3.4040e-003
tblVehicleEF	LDT2	8.5100e-004	7.2200e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.13	0.16
tblVehicleEF	LDT2	0.06	0.09
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50

tblVehicleEF	LDT2	0.14	0.42
tblVehicleEF	LDT2	7.8730e-003	5.5090e-003
tblVehicleEF	LDT2	7.7350e-003	0.07
tblVehicleEF	LDT2	1.04	1.30
tblVehicleEF	LDT2	1.53	2.39
tblVehicleEF	LDT2	397.09	369.57
tblVehicleEF	LDT2	81.97	71.94
tblVehicleEF	LDT2	0.09	0.09
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	3.9810e-003	3.6570e-003
tblVehicleEF	LDT2	8.4600e-004	7.1200e-004
tblVehicleEF	LDT2	0.14	0.22
tblVehicleEF	LDT2	0.16	0.19
tblVehicleEF	LDT2	0.12	0.19
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.07	0.50
tblVehicleEF	LDT2	0.11	0.35
tblVehicleEF	LDT2	6.7430e-003	4.7100e-003

tblVehicleEF	LDT2	9.2200e-003	0.08
tblVehicleEF	LDT2	0.81	1.01
tblVehicleEF	LDT2	1.82	2.84
tblVehicleEF	LDT2	355.82	337.97
tblVehicleEF	LDT2	81.97	72.85
tblVehicleEF	LDT2	0.09	0.10
tblVehicleEF	LDT2	1.7370e-003	1.5970e-003
tblVehicleEF	LDT2	2.4180e-003	2.0410e-003
tblVehicleEF	LDT2	1.5980e-003	1.4690e-003
tblVehicleEF	LDT2	2.2230e-003	1.8770e-003
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.58
tblVehicleEF	LDT2	0.12	0.38
tblVehicleEF	LDT2	3.5650e-003	3.3440e-003
tblVehicleEF	LDT2	8.5100e-004	7.2100e-004
tblVehicleEF	LDT2	0.07	0.11
tblVehicleEF	LDT2	0.15	0.17
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.08	0.58
tblVehicleEF	LDT2	0.14	0.41
tblVehicleEF	LHD1	5.4860e-003	4.9840e-003
tblVehicleEF	LHD1	0.01	7.1410e-003
tblVehicleEF	LHD1	0.02	0.02

tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.77	1.07
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.99
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.26	1.69
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.29	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6200e-004	1.0900e-004
tblVehicleEF	LHD1	3.7970e-003	3.3360e-003

tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8480e-003	1.6030e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.62
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD1	5.4860e-003	5.0000e-003
tblVehicleEF	LHD1	0.01	7.3180e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.18	0.99
tblVehicleEF	LHD1	2.58	1.00
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.98
tblVehicleEF	LHD1	30.92	10.87
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.12	1.58
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004
tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11

tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.27	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0370e-003	6.3960e-003
tblVehicleEF	LHD1	3.5800e-004	1.0800e-004
tblVehicleEF	LHD1	7.5090e-003	6.6400e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	4.2150e-003	3.7110e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.35	0.63
tblVehicleEF	LHD1	0.30	0.09
tblVehicleEF	LHD1	5.4860e-003	4.9870e-003
tblVehicleEF	LHD1	0.01	7.1590e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.17
tblVehicleEF	LHD1	1.16	0.97
tblVehicleEF	LHD1	2.72	1.05
tblVehicleEF	LHD1	9.23	9.41
tblVehicleEF	LHD1	614.92	656.94
tblVehicleEF	LHD1	30.92	10.96
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	2.22	1.66
tblVehicleEF	LHD1	9.6600e-004	9.4300e-004

tblVehicleEF	LHD1	0.01	9.9510e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	1.0070e-003	2.7600e-004
tblVehicleEF	LHD1	9.2400e-004	9.0200e-004
tblVehicleEF	LHD1	2.5280e-003	2.4880e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.2600e-004	2.5400e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.28	0.08
tblVehicleEF	LHD1	9.2000e-005	9.1000e-005
tblVehicleEF	LHD1	6.0360e-003	6.3950e-003
tblVehicleEF	LHD1	3.6100e-004	1.0800e-004
tblVehicleEF	LHD1	4.1760e-003	3.7150e-003
tblVehicleEF	LHD1	0.13	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8200e-003	1.5810e-003
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.38	0.67
tblVehicleEF	LHD1	0.31	0.09
tblVehicleEF	LHD2	3.8190e-003	3.4060e-003
tblVehicleEF	LHD2	5.2410e-003	4.5240e-003
tblVehicleEF	LHD2	9.1660e-003	0.01

tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.29	0.64
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.51
tblVehicleEF	LHD2	24.89	7.96
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.69	1.81
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7300e-004	7.9000e-005
tblVehicleEF	LHD2	1.4000e-003	1.6380e-003
tblVehicleEF	LHD2	0.04	0.05

tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.3800e-004	8.2600e-004
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.14	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4160e-003
tblVehicleEF	LHD2	5.3190e-003	4.5750e-003
tblVehicleEF	LHD2	8.7380e-003	9.6870e-003
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.56	0.62
tblVehicleEF	LHD2	1.21	0.60
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.89
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.59	1.70
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02

tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7100e-004	7.8000e-005
tblVehicleEF	LHD2	2.7070e-003	3.1900e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.6130e-003	1.8380e-003
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.31
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	LHD2	3.8190e-003	3.4070e-003
tblVehicleEF	LHD2	5.2490e-003	4.5300e-003
tblVehicleEF	LHD2	9.0820e-003	0.01
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.61
tblVehicleEF	LHD2	1.27	0.63
tblVehicleEF	LHD2	14.32	14.63
tblVehicleEF	LHD2	614.63	657.52
tblVehicleEF	LHD2	24.89	7.94
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	1.67	1.78
tblVehicleEF	LHD2	1.3030e-003	1.3910e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01

tblVehicleEF	LHD2	4.2500e-004	1.3300e-004
tblVehicleEF	LHD2	1.2470e-003	1.3310e-003
tblVehicleEF	LHD2	2.6810e-003	2.6890e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9100e-004	1.2300e-004
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.12	0.05
tblVehicleEF	LHD2	5.9810e-003	6.3440e-003
tblVehicleEF	LHD2	2.7200e-004	7.9000e-005
tblVehicleEF	LHD2	1.4600e-003	1.7460e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.2300e-004	8.0700e-004
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.33
tblVehicleEF	LHD2	0.13	0.05
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.16	0.25
tblVehicleEF	MCY	21.02	21.16
tblVehicleEF	MCY	9.91	8.77
tblVehicleEF	MCY	167.12	211.16
tblVehicleEF	MCY	46.87	61.87

tblVehicleEF	MCY	1.17	1.17
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84
tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.26	2.26
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.17	1.92
tblVehicleEF	MCY	2.0790e-003	2.0900e-003
tblVehicleEF	MCY	6.9500e-004	6.1200e-004
tblVehicleEF	MCY	1.45	1.44
tblVehicleEF	MCY	0.85	0.84
tblVehicleEF	MCY	0.80	0.80
tblVehicleEF	MCY	2.76	2.76
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.37	2.08
tblVehicleEF	MCY	0.41	0.32
tblVehicleEF	MCY	0.14	0.22
tblVehicleEF	MCY	21.14	21.29
tblVehicleEF	MCY	9.06	7.97
tblVehicleEF	MCY	167.12	211.14
tblVehicleEF	MCY	46.87	59.68
tblVehicleEF	MCY	0.99	0.99
tblVehicleEF	MCY	1.8190e-003	1.7890e-003

tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003
tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.19	2.19
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	1.87	1.64
tblVehicleEF	MCY	2.0790e-003	2.0890e-003
tblVehicleEF	MCY	6.7100e-004	5.9100e-004
tblVehicleEF	MCY	3.14	3.13
tblVehicleEF	MCY	1.28	1.28
tblVehicleEF	MCY	2.14	2.12
tblVehicleEF	MCY	2.69	2.68
tblVehicleEF	MCY	0.50	2.09
tblVehicleEF	MCY	2.03	1.78
tblVehicleEF	MCY	0.42	0.33
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	20.06	20.18
tblVehicleEF	MCY	9.53	8.41
tblVehicleEF	MCY	167.12	209.47
tblVehicleEF	MCY	46.87	61.06
tblVehicleEF	MCY	1.13	1.13
tblVehicleEF	MCY	1.8190e-003	1.7890e-003
tblVehicleEF	MCY	3.7460e-003	3.1050e-003
tblVehicleEF	MCY	1.7050e-003	1.6760e-003

tblVehicleEF	MCY	3.5370e-003	2.9300e-003
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.22	2.22
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.10	1.84
tblVehicleEF	MCY	2.0630e-003	2.0730e-003
tblVehicleEF	MCY	6.8600e-004	6.0400e-004
tblVehicleEF	MCY	1.71	1.70
tblVehicleEF	MCY	1.14	1.12
tblVehicleEF	MCY	0.72	0.71
tblVehicleEF	MCY	2.71	2.71
tblVehicleEF	MCY	0.57	2.38
tblVehicleEF	MCY	2.28	2.00
tblVehicleEF	MDV	0.01	6.6050e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.55	1.33
tblVehicleEF	MDV	3.59	3.53
tblVehicleEF	MDV	498.66	425.70
tblVehicleEF	MDV	110.76	90.07
tblVehicleEF	MDV	0.20	0.14
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12

tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.28	0.50
tblVehicleEF	MDV	5.0000e-003	4.2090e-003
tblVehicleEF	MDV	1.1710e-003	8.9100e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.21	0.18
tblVehicleEF	MDV	0.09	0.11
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MDV	0.02	7.4780e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.87	1.60
tblVehicleEF	MDV	2.99	2.92
tblVehicleEF	MDV	542.90	452.84
tblVehicleEF	MDV	110.76	88.84
tblVehicleEF	MDV	0.18	0.12
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22

tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.24	0.42
tblVehicleEF	MDV	5.4470e-003	4.4780e-003
tblVehicleEF	MDV	1.1600e-003	8.7900e-004
tblVehicleEF	MDV	0.21	0.25
tblVehicleEF	MDV	0.24	0.21
tblVehicleEF	MDV	0.18	0.22
tblVehicleEF	MDV	0.06	0.05
tblVehicleEF	MDV	0.11	0.53
tblVehicleEF	MDV	0.26	0.46
tblVehicleEF	MDV	0.01	6.4310e-003
tblVehicleEF	MDV	0.02	0.10
tblVehicleEF	MDV	1.47	1.25
tblVehicleEF	MDV	3.53	3.47
tblVehicleEF	MDV	488.33	419.25
tblVehicleEF	MDV	110.76	89.97
tblVehicleEF	MDV	0.19	0.13
tblVehicleEF	MDV	1.8680e-003	1.7260e-003
tblVehicleEF	MDV	2.5890e-003	2.1810e-003
tblVehicleEF	MDV	1.7240e-003	1.5930e-003
tblVehicleEF	MDV	2.3820e-003	2.0080e-003
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.13	0.61

tblVehicleEF	MDV	0.28	0.49
tblVehicleEF	MDV	4.8960e-003	4.1450e-003
tblVehicleEF	MDV	1.1700e-003	8.9000e-004
tblVehicleEF	MDV	0.10	0.12
tblVehicleEF	MDV	0.23	0.20
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.05	0.04
tblVehicleEF	MDV	0.13	0.61
tblVehicleEF	MDV	0.31	0.54
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.60	0.37
tblVehicleEF	MH	6.96	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.64	4.70
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00

tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.2000e-004	0.00
tblVehicleEF	MH	1.56	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.54	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.44	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.74	0.37
tblVehicleEF	MH	6.31	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.50	4.42
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00

tblVehicleEF	MH	0.37	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.0900e-004	0.00
tblVehicleEF	MH	3.12	0.00
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	1.30	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.41	0.00
tblVehicleEF	MH	0.04	3.8870e-003
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	3.61	0.37
tblVehicleEF	MH	6.87	0.00
tblVehicleEF	MH	1,048.28	958.86
tblVehicleEF	MH	59.91	0.00
tblVehicleEF	MH	1.61	4.62
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.15
tblVehicleEF	MH	1.2510e-003	0.00
tblVehicleEF	MH	3.2210e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	1.1500e-003	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.12	0.08
tblVehicleEF	MH	0.03	0.00

tblVehicleEF	MH	0.40	0.00
tblVehicleEF	MH	0.01	9.0650e-003
tblVehicleEF	MH	7.1900e-004	0.00
tblVehicleEF	MH	1.88	0.00
tblVehicleEF	MH	0.12	0.00
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.17	0.10
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.43	0.00
tblVehicleEF	MHD	0.02	3.2250e-003
tblVehicleEF	MHD	4.1450e-003	6.0340e-003
tblVehicleEF	MHD	0.06	8.8310e-003
tblVehicleEF	MHD	0.33	0.34
tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	6.00	1.03
tblVehicleEF	MHD	155.10	71.06
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.43
tblVehicleEF	MHD	0.63	0.61
tblVehicleEF	MHD	1.08	2.22
tblVehicleEF	MHD	4.3700e-004	2.0190e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	4.1800e-004	1.9320e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004

tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.11
tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.4910e-003	6.7400e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4400e-004	8.3000e-005
tblVehicleEF	MHD	1.4330e-003	6.5800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	7.1400e-004	3.2600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.11
tblVehicleEF	MHD	0.40	0.05
tblVehicleEF	MHD	0.02	3.0610e-003
tblVehicleEF	MHD	4.2290e-003	6.0860e-003
tblVehicleEF	MHD	0.05	8.4200e-003
tblVehicleEF	MHD	0.24	0.28
tblVehicleEF	MHD	0.32	0.56
tblVehicleEF	MHD	5.61	0.96
tblVehicleEF	MHD	164.29	72.29
tblVehicleEF	MHD	1,105.72	1,029.54
tblVehicleEF	MHD	53.92	8.32
tblVehicleEF	MHD	0.65	0.62
tblVehicleEF	MHD	1.01	2.09

tblVehicleEF	MHD	3.6900e-004	1.7050e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	3.5300e-004	1.6310e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.35	0.04
tblVehicleEF	MHD	1.5770e-003	6.8600e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.3800e-004	8.2000e-005
tblVehicleEF	MHD	2.8480e-003	1.3100e-003
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	1.6690e-003	7.6600e-004
tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.12
tblVehicleEF	MHD	0.38	0.05
tblVehicleEF	MHD	0.02	3.4660e-003
tblVehicleEF	MHD	4.1530e-003	6.0380e-003
tblVehicleEF	MHD	0.06	8.7320e-003
tblVehicleEF	MHD	0.46	0.42

tblVehicleEF	MHD	0.31	0.55
tblVehicleEF	MHD	5.90	1.02
tblVehicleEF	MHD	142.41	69.34
tblVehicleEF	MHD	1,105.72	1,029.53
tblVehicleEF	MHD	53.92	8.40
tblVehicleEF	MHD	0.60	0.60
tblVehicleEF	MHD	1.06	2.18
tblVehicleEF	MHD	5.3200e-004	2.4540e-003
tblVehicleEF	MHD	5.5780e-003	0.06
tblVehicleEF	MHD	8.2200e-004	1.0600e-004
tblVehicleEF	MHD	5.0900e-004	2.3480e-003
tblVehicleEF	MHD	5.3330e-003	0.06
tblVehicleEF	MHD	7.5600e-004	9.7000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	7.0500e-004	3.2200e-004
tblVehicleEF	MHD	0.04	0.10
tblVehicleEF	MHD	0.02	0.13
tblVehicleEF	MHD	0.36	0.05
tblVehicleEF	MHD	1.3710e-003	6.5800e-004
tblVehicleEF	MHD	0.01	9.8100e-003
tblVehicleEF	MHD	6.4300e-004	8.3000e-005
tblVehicleEF	MHD	1.5800e-003	7.2800e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	7.0500e-004	3.2200e-004

tblVehicleEF	MHD	0.05	0.12
tblVehicleEF	MHD	0.02	0.13
tblVehicleEF	MHD	0.39	0.05
tblVehicleEF	OBUS	0.01	9.3650e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.27	0.49
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.67	2.81
tblVehicleEF	OBUS	70.21	68.33
tblVehicleEF	OBUS	1,126.32	1,507.23
tblVehicleEF	OBUS	71.08	22.19
tblVehicleEF	OBUS	0.32	0.39
tblVehicleEF	OBUS	1.10	1.47
tblVehicleEF	OBUS	1.1300e-004	1.5090e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.0800e-004	1.4440e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.41	0.13

tblVehicleEF	OBUS	6.8200e-004	6.5300e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2800e-004	2.2000e-004
tblVehicleEF	OBUS	2.2350e-003	2.8130e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.4600e-004	1.1440e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	OBUS	0.01	9.3930e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.26	0.47
tblVehicleEF	OBUS	0.75	1.22
tblVehicleEF	OBUS	6.11	2.57
tblVehicleEF	OBUS	73.34	68.71
tblVehicleEF	OBUS	1,126.32	1,507.28
tblVehicleEF	OBUS	71.08	21.80
tblVehicleEF	OBUS	0.33	0.39
tblVehicleEF	OBUS	1.02	1.35
tblVehicleEF	OBUS	9.5000e-005	1.2750e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	9.1000e-005	1.2200e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004

tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.05	0.09
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.39	0.13
tblVehicleEF	OBUS	7.1200e-004	6.5600e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.1800e-004	2.1600e-004
tblVehicleEF	OBUS	4.3510e-003	5.4910e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	2.1830e-003	2.6560e-003
tblVehicleEF	OBUS	0.07	0.11
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.42	0.14
tblVehicleEF	OBUS	0.01	9.3640e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.28	0.51
tblVehicleEF	OBUS	0.73	1.19
tblVehicleEF	OBUS	6.62	2.79
tblVehicleEF	OBUS	65.88	67.80
tblVehicleEF	OBUS	1,126.32	1,507.24
tblVehicleEF	OBUS	71.08	22.15
tblVehicleEF	OBUS	0.31	0.39

tblVehicleEF	OBUS	1.08	1.44
tblVehicleEF	OBUS	1.3700e-004	1.8320e-003
tblVehicleEF	OBUS	5.4210e-003	0.03
tblVehicleEF	OBUS	9.1200e-004	2.2900e-004
tblVehicleEF	OBUS	1.3100e-004	1.7520e-003
tblVehicleEF	OBUS	5.1650e-003	0.02
tblVehicleEF	OBUS	8.3900e-004	2.1000e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.41	0.13
tblVehicleEF	OBUS	6.4100e-004	6.4800e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	8.2700e-004	2.1900e-004
tblVehicleEF	OBUS	2.3980e-003	3.0600e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	9.5900e-004	1.1590e-003
tblVehicleEF	OBUS	0.06	0.11
tblVehicleEF	OBUS	0.05	0.33
tblVehicleEF	OBUS	0.45	0.15
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3980e-003
tblVehicleEF	SBUS	0.07	3.9120e-003

tblVehicleEF	SBUS	5.64	1.82
tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.49	0.54
tblVehicleEF	SBUS	1,270.71	336.96
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.11
tblVehicleEF	SBUS	12.46	3.45
tblVehicleEF	SBUS	5.17	5.36
tblVehicleEF	SBUS	0.01	4.4720e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	4.2790e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004
tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.68	0.19
tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.28	0.02
tblVehicleEF	SBUS	0.01	3.2020e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.0740e-003	7.7800e-004

tblVehicleEF	SBUS	0.02	5.7810e-003
tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.3130e-003	3.5100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.31	0.02
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.4900e-003
tblVehicleEF	SBUS	0.06	3.2450e-003
tblVehicleEF	SBUS	5.48	1.78
tblVehicleEF	SBUS	0.72	0.64
tblVehicleEF	SBUS	3.76	0.38
tblVehicleEF	SBUS	1,335.64	345.46
tblVehicleEF	SBUS	1,144.20	1,143.58
tblVehicleEF	SBUS	36.06	2.85
tblVehicleEF	SBUS	12.86	3.52
tblVehicleEF	SBUS	4.84	5.03
tblVehicleEF	SBUS	0.01	3.7780e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.01	3.6140e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003

tblVehicleEF	SBUS	0.67	0.19
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.23	0.02
tblVehicleEF	SBUS	0.01	3.2820e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.2700e-004	2.8000e-005
tblVehicleEF	SBUS	5.9210e-003	1.3950e-003
tblVehicleEF	SBUS	0.02	6.1530e-003
tblVehicleEF	SBUS	0.96	0.27
tblVehicleEF	SBUS	2.9370e-003	6.8100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	9.6420e-003	0.04
tblVehicleEF	SBUS	0.25	0.02
tblVehicleEF	SBUS	0.86	0.04
tblVehicleEF	SBUS	0.01	7.3930e-003
tblVehicleEF	SBUS	0.07	4.0100e-003
tblVehicleEF	SBUS	5.85	1.87
tblVehicleEF	SBUS	0.71	0.62
tblVehicleEF	SBUS	5.54	0.56
tblVehicleEF	SBUS	1,181.05	325.23
tblVehicleEF	SBUS	1,144.20	1,143.56
tblVehicleEF	SBUS	36.06	3.14
tblVehicleEF	SBUS	11.91	3.35
tblVehicleEF	SBUS	5.09	5.28
tblVehicleEF	SBUS	0.02	5.4310e-003

tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	5.0600e-004	3.0000e-005
tblVehicleEF	SBUS	0.02	5.1960e-003
tblVehicleEF	SBUS	2.7630e-003	2.7740e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	4.6500e-004	2.7000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003
tblVehicleEF	SBUS	0.68	0.19
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.12	0.10
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.29	0.02
tblVehicleEF	SBUS	0.01	3.0910e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	4.5600e-004	3.1000e-005
tblVehicleEF	SBUS	3.2090e-003	7.9400e-004
tblVehicleEF	SBUS	0.02	6.3370e-003
tblVehicleEF	SBUS	0.97	0.27
tblVehicleEF	SBUS	1.2980e-003	3.6100e-004
tblVehicleEF	SBUS	0.14	0.12
tblVehicleEF	SBUS	0.01	0.05
tblVehicleEF	SBUS	0.32	0.03
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.79	32.64

tblVehicleEF	UBUS	14.93	1.46
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.41
tblVehicleEF	UBUS	6.43	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004
tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.19	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.6230e-003	1.7200e-004
tblVehicleEF	UBUS	8.4220e-003	1.6730e-003
tblVehicleEF	UBUS	0.12	0.01
tblVehicleEF	UBUS	4.0730e-003	7.0000e-004
tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.30	0.08
tblVehicleEF	UBUS	1.95	4.19

tblVehicleEF	UBUS	0.08	0.02
tblVehicleEF	UBUS	9.90	32.64
tblVehicleEF	UBUS	12.23	1.20
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	16.98
tblVehicleEF	UBUS	5.98	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	0.02	3.2040e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	0.67	0.06
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	1.06	0.06
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.5760e-003	1.6800e-004
tblVehicleEF	UBUS	0.02	3.2040e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	9.6640e-003	1.6440e-003
tblVehicleEF	UBUS	2.69	4.28
tblVehicleEF	UBUS	0.02	0.05

tblVehicleEF	UBUS	1.16	0.07
tblVehicleEF	UBUS	1.95	4.19
tblVehicleEF	UBUS	0.09	0.02
tblVehicleEF	UBUS	9.80	32.64
tblVehicleEF	UBUS	14.43	1.42
tblVehicleEF	UBUS	1,861.83	1,734.35
tblVehicleEF	UBUS	135.15	17.36
tblVehicleEF	UBUS	6.31	0.38
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.07	2.6450e-003
tblVehicleEF	UBUS	1.3790e-003	1.6700e-004
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	6.3130e-003
tblVehicleEF	UBUS	0.07	2.5170e-003
tblVehicleEF	UBUS	1.2680e-003	1.5300e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004
tblVehicleEF	UBUS	0.66	0.06
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.17	0.07
tblVehicleEF	UBUS	0.01	3.9850e-003
tblVehicleEF	UBUS	1.6140e-003	1.7200e-004
tblVehicleEF	UBUS	9.6690e-003	1.7590e-003
tblVehicleEF	UBUS	0.15	0.01
tblVehicleEF	UBUS	4.2700e-003	6.8900e-004

tblVehicleEF	UBUS	2.68	4.28
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	1.28	0.08
tblVehicleTrips	CC_TTP	0.00	79.50
tblVehicleTrips	CNW_TTP	0.00	19.00
tblVehicleTrips	CW_TTP	0.00	1.50
tblVehicleTrips	DV_TP	51.00	0.00
tblVehicleTrips	DV_TP	26.00	0.00
tblVehicleTrips	DV_TP	58.00	0.00
tblVehicleTrips	DV_TP	27.00	0.00
tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	DV_TP	20.00	0.00
tblVehicleTrips	DV_TP	18.00	0.00
tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	PB_TP	28.00	86.00
tblVehicleTrips	PB_TP	47.00	65.00
tblVehicleTrips	PB_TP	14.00	58.00
tblVehicleTrips	PB_TP	59.00	85.00
tblVehicleTrips	PB_TP	9.00	45.00
tblVehicleTrips	PB_TP	43.00	88.00
tblVehicleTrips	PB_TP	44.00	73.00
tblVehicleTrips	PB_TP	11.00	63.00
tblVehicleTrips	PB_TP	0.00	54.00
tblVehicleTrips	PR_TP	21.00	14.00
tblVehicleTrips	PR_TP	27.00	35.00
tblVehicleTrips	PR_TP	28.00	42.00
tblVehicleTrips	PR_TP	14.00	15.00

tblVehicleTrips	PR_TP	52.00	55.00
tblVehicleTrips	PR_TP	37.00	12.00
tblVehicleTrips	PR_TP	38.00	27.00
tblVehicleTrips	PR_TP	54.00	37.00
tblVehicleTrips	PR_TP	0.00	46.00
tblVehicleTrips	ST_TR	23.72	304.00
tblVehicleTrips	ST_TR	6.21	6.22
tblVehicleTrips	ST_TR	168.56	182.17
tblVehicleTrips	ST_TR	158.37	122.40
tblVehicleTrips	ST_TR	8.19	10.50
tblVehicleTrips	ST_TR	94.36	90.04
tblVehicleTrips	ST_TR	49.97	46.12
tblVehicleTrips	ST_TR	0.00	87.70
tblVehicleTrips	SU_TR	11.88	410.00
tblVehicleTrips	SU_TR	5.83	5.84
tblVehicleTrips	SU_TR	168.56	166.88
tblVehicleTrips	SU_TR	131.84	142.64
tblVehicleTrips	SU_TR	5.95	8.48
tblVehicleTrips	SU_TR	72.16	71.97
tblVehicleTrips	SU_TR	25.24	21.10
tblVehicleTrips	SU_TR	0.00	87.70
tblVehicleTrips	WD_TR	23.72	142.00
tblVehicleTrips	WD_TR	148.15	79.67
tblVehicleTrips	WD_TR	74.06	47.62
tblVehicleTrips	WD_TR	168.56	172.01
tblVehicleTrips	WD_TR	32.93	30.00
tblVehicleTrips	WD_TR	127.15	112.18

tblVehicleTrips	WD_TR	8.17	12.23
tblVehicleTrips	WD_TR	89.95	83.84
tblVehicleTrips	WD_TR	42.70	37.75
tblVehicleTrips	WD_TR	0.00	820.38
tblWater	IndoorWaterUseRate	338,691.99	3,136,416.99
tblWater	IndoorWaterUseRate	0.00	667,774.17
tblWater	OutdoorWaterUseRate	0.00	42,623.88

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Energy	0.3178	2.8889	2.4267	0.0173		0.2196	0.2196		0.2196	0.2196		3,466.7030	3,466.7030	0.0665	0.0636	3,487.3039
Mobile	36.6107	106.7136	192.2829	0.4383	35.8702	0.7365	36.6067	9.5867	0.6972	10.2838		45,161.1201	45,161.1201	3.3551		45,244.9982
Total	**42.2445**	**109.6040**	**194.8717**	**0.4556**	**35.8702**	**0.9566**	**36.8268**	**9.5867**	**0.9173**	**10.5040**		**48,628.1693**	**48,628.1693**	**3.4225**	**0.0636**	**48,732.6712**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Energy	0.3178	2.8889	2.4267	0.0173		0.2196	0.2196		0.2196	0.2196		3,466.7030	3,466.7030	0.0665	0.0636	3,487.3039
Mobile	36.6107	106.7136	192.2829	0.4383	35.8702	0.7365	36.6067	9.5867	0.6972	10.2838		45,161.1201	45,161.1201	3.3551		45,244.9982
Total	**42.2445**	**109.6040**	**194.8717**	**0.4556**	**35.8702**	**0.9566**	**36.8268**	**9.5867**	**0.9173**	**10.5040**		**48,628.1693**	**48,628.1693**	**3.4225**	**0.0636**	**48,732.6712**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/25/2020	6/25/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 17.56

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.2 Site Preparation - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	36.6107	106.7136	192.2829	0.4383	35.8702	0.7365	36.6067	9.5867	0.6972	10.2838		45,161.1201	45,161.1201	3.3551		45,244.9982
Unmitigated	36.6107	106.7136	192.2829	0.4383	35.8702	0.7365	36.6067	9.5867	0.6972	10.2838		45,161.1201	45,161.1201	3.3551		45,244.9982

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	511.20	1,094.40	1476.00	426,767	426,767
Bank (with Drive-Through)	478.02	517.92	191.40	498,767	498,767
Day-Care Center	475.72	62.14	58.34	518,758	518,758
Gasoline/Service Station	3,096.18	3,279.06	3003.84	1,501,619	1,501,619
Health Club	1,140.00	793.06	1015.74	2,057,883	2,057,883
High Turnover (Sit Down Restaurant)	654.01	713.59	831.59	286,809	286,809
Hotel	1,651.05	1,417.50	1144.80	3,687,504	3,687,504
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Quality Restaurant	1,106.69	1,188.53	950.00	1,009,217	1,009,217
Regional Shopping Center	1,925.25	2,352.12	1076.10	2,416,706	2,416,706
User Defined Recreational	1,804.84	192.94	192.94	1,880,704	1,880,704
Total	12,842.96	11,611.26	9,940.76	14,284,735	14,284,735

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	16.60	8.40	6.90	33.00	48.00	19.00	14	0	86
Bank (with Drive-Through)	16.60	8.40	6.90	6.60	74.40	19.00	35	0	65
Day-Care Center	16.60	8.40	6.90	12.70	82.30	5.00	42	0	58
Gasoline/Service Station	16.60	8.40	6.90	2.00	79.00	19.00	15	0	85
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	55	0	45
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	12	0	88
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Quality Restaurant	16.60	8.40	6.90	12.00	69.00	19.00	27	0	73
Regional Shopping Center	16.60	8.40	6.90	16.30	64.70	19.00	37	0	63
User Defined Recreational	16.60	8.40	6.90	1.50	79.50	19.00	46	0	54

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Bank (with Drive-Through)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Day-Care Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Gasoline/Service Station	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Health Club	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
High Turnover (Sit Down Restaurant)	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Hotel	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Other Asphalt Surfaces	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Parking Lot	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Quality Restaurant	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
Regional Shopping Center	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010
User Defined Recreational	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Bedford Marketplace (Operations) - San Bernardino-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.3178	2.8889	2.4267	0.0173		0.2196	0.2196		0.2196	0.2196		3,466.7030	3,466.7030	0.0665	0.0636	3,487.3039
NaturalGas Unmitigated	0.3178	2.8889	2.4267	0.0173		0.2196	0.2196		0.2196	0.2196		3,466.7030	3,466.7030	0.0665	0.0636	3,487.3039

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	274.981	2.9700e-003	0.0270	0.0227	1.6000e-004		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003		32.3507	32.3507	6.2000e-004	5.9000e-004	32.5429
Bank (with Drive-Through)	458.301	4.9400e-003	0.0449	0.0377	2.7000e-004		3.4100e-003	3.4100e-003		3.4100e-003	3.4100e-003		53.9178	53.9178	1.0300e-003	9.9000e-004	54.2382
Day-Care Center	182.557	1.9700e-003	0.0179	0.0150	1.1000e-004		1.3600e-003	1.3600e-003		1.3600e-003	1.3600e-003		21.4773	21.4773	4.1000e-004	3.9000e-004	21.6049
Gasoline/Service Station	305.534	3.2900e-003	0.0300	0.0252	1.8000e-004		2.2800e-003	2.2800e-003		2.2800e-003	2.2800e-003		35.9452	35.9452	6.9000e-004	6.6000e-004	36.1588
Health Club	2902.58	0.0313	0.2846	0.2390	1.7100e-003		0.0216	0.0216		0.0216	0.0216		341.4795	341.4795	6.5500e-003	6.2600e-003	343.5087
High Turnover (Sit Down Restaurant)	3992.65	0.0431	0.3914	0.3288	2.3500e-003		0.0298	0.0298		0.0298	0.0298		469.7230	469.7230	9.0000e-003	8.6100e-003	472.5143
Hotel	10567.4	0.1140	1.0360	0.8703	6.2200e-003		0.0787	0.0787		0.0787	0.0787		1,243.2210	1,243.2210	0.0238	0.0228	1,250.6088
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	9046.16	0.0976	0.8869	0.7450	5.3200e-003		0.0674	0.0674		0.0674	0.0674		1,064.2540	1,064.2540	0.0204	0.0195	1,070.5783
Regional Shopping Center	229.151	2.4700e-003	0.0225	0.0189	1.3000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003		26.9589	26.9589	5.2000e-004	4.9000e-004	27.1191
User Defined Recreational	1507.69	0.0163	0.1478	0.1242	8.9000e-004		0.0112	0.0112		0.0112	0.0112		177.3757	177.3757	3.4000e-003	3.2500e-003	178.4297
Total		**0.3178**	**2.8889**	**2.4267**	**0.0173**		**0.2196**	**0.2196**		**0.2196**	**0.2196**		**3,466.7030**	**3,466.7030**	**0.0665**	**0.0635**	**3,487.3039**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	0.274981	2.9700e-003	0.0270	0.0227	1.6000e-004		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003		32.3507	32.3507	6.2000e-004	5.9000e-004	32.5429
Bank (with Drive-Through)	0.458301	4.9400e-003	0.0449	0.0377	2.7000e-004		3.4100e-003	3.4100e-003		3.4100e-003	3.4100e-003		53.9178	53.9178	1.0300e-003	9.9000e-004	54.2382
Day-Care Center	0.182557	1.9700e-003	0.0179	0.0150	1.1000e-004		1.3600e-003	1.3600e-003		1.3600e-003	1.3600e-003		21.4773	21.4773	4.1000e-004	3.9000e-004	21.6049
Gasoline/Service Station	0.305534	3.2900e-003	0.0300	0.0252	1.8000e-004		2.2800e-003	2.2800e-003		2.2800e-003	2.2800e-003		35.9452	35.9452	6.9000e-004	6.6000e-004	36.1588
Health Club	2.90258	0.0313	0.2846	0.2390	1.7100e-003		0.0216	0.0216		0.0216	0.0216		341.4795	341.4795	6.5500e-003	6.2600e-003	343.5087
High Turnover (Sit Down Restaurant)	3.99265	0.0431	0.3914	0.3288	2.3500e-003		0.0298	0.0298		0.0298	0.0298		469.7230	469.7230	9.0000e-003	8.6100e-003	472.5143
Hotel	10.5674	0.1140	1.0360	0.8703	6.2200e-003		0.0787	0.0787		0.0787	0.0787		1,243.2210	1,243.2210	0.0238	0.0228	1,250.6088
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	9.04616	0.0976	0.8869	0.7450	5.3200e-003		0.0674	0.0674		0.0674	0.0674		1,064.2540	1,064.2540	0.0204	0.0195	1,070.5783
Regional Shopping Center	0.229151	2.4700e-003	0.0225	0.0189	1.3000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003		26.9589	26.9589	5.2000e-004	4.9000e-004	27.1191
User Defined Recreational	1.50769	0.0163	0.1478	0.1242	8.9000e-004		0.0112	0.0112		0.0112	0.0112		177.3757	177.3757	3.4000e-003	3.2500e-003	178.4297
Total		**0.3178**	**2.8889**	**2.4267**	**0.0173**		**0.2196**	**0.2196**		**0.2196**	**0.2196**		**3,466.7030**	**3,466.7030**	**0.0665**	**0.0635**	**3,487.3039**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Unmitigated	5.3160	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.6235					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.6773					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0151	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Total	**5.3159**	**1.4900e-003**	**0.1621**	**1.0000e-005**		**5.8000e-004**	**5.8000e-004**		**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**		**0.3691**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.6235					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.6773					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0151	1.4900e-003	0.1621	1.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004		0.3462	0.3462	9.2000e-004		0.3691
Total	**5.3159**	**1.4900e-003**	**0.1621**	**1.0000e-005**		**5.8000e-004**	**5.8000e-004**		**5.8000e-004**	**5.8000e-004**		**0.3462**	**0.3462**	**9.2000e-004**		**0.3691**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

This Page Intentionally Left Blank

APPENDIX B-2:

Bedford Marketplace Soil Import/Export Air Quality Assessment

This Page Intentionally Left Blank

URBAN CROSSROADS

260 E. Baker St. | Suite 200 | Costa Mesa, CA 92626 | (949) 660-1994
urbanxroads.com

August 9, 2019

Mr. Glen Powels
Guardian Capital
5780 Fleet Street, Suite 225
Carlsbad, CA 92008

SUBJECT: BEDFORD MARKETPLACE SOIL IMPORT/EXPORT AIR QUALITY ASSESSMENT

Dear Mr. Glen Powels:

The purpose of this Air Quality Assessment is to identify the potential air impacts associated with the Bedford Marketplace Soil Import/Export activities. ("Project").

SUMMARY OF FINDINGS

Results of the Memo indicate the construction and operations of the Project would result in *less than significant impacts* associated with air quality emissions after implementation of recommended mitigation measures.

PROJECT DESCRIPTION

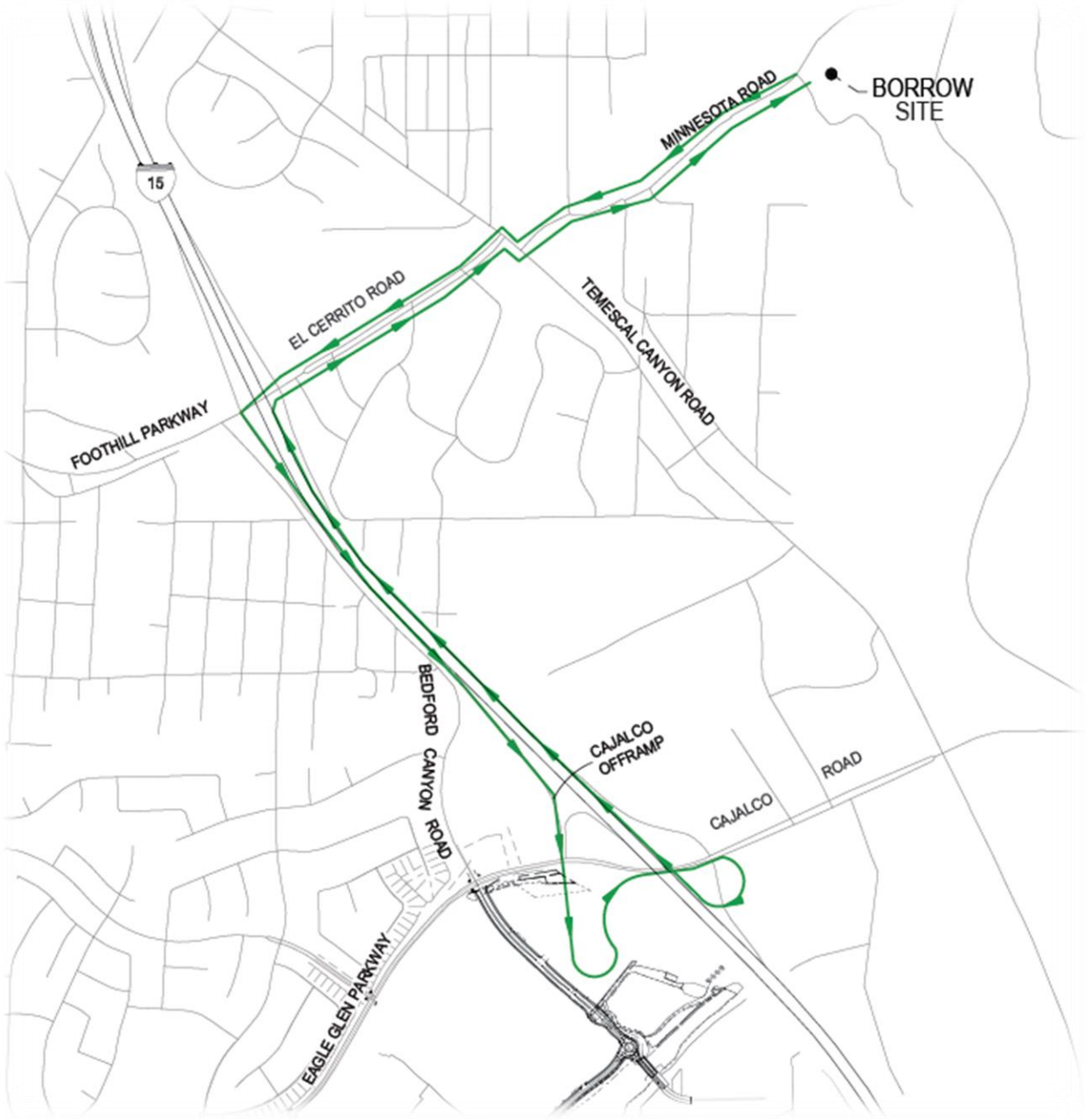
The activities associated with the Project are intended to bring the Modified Bedford Marketplace Project Site up to an elevation similar (within five feet) of the existing 10-acre commercial pad, import of approximately 440,000 cubic yards of dirt is required. The import operation is expected to include 250 full loads per night, assuming 14 cubic yards per load, for a total of 3,500 cubic yards per night. To import 440,000 cubic yards, approximately 126 nights of import would be required.

The Applicant proposes to import dirt during the hours (8 pm to 4 am) and complete grading operations both during daytime and nighttime hours. A source of import has been identified from the FST Sand and Gravel Mine, located east of I-15. The dirt would be hauled from the borrow site on El Cerrito to I-15 southbound, exit at Cajalco Road and enter the Modified Project Site by crossing Cajalco Road from the southbound off-ramp with traffic control. Trucks would return onto Cajalco Road, enter I-15 northbound to El Cerrito Road and travel east to the borrow site. Exhibit A presents the proposed haul routes.

SOIL IMPORT/EXPORT HAUL TRUCK TRAFFIC

The Project haul truck trips include the both the 250 import and 250 export trips representing a total of 500 two-way (import and export) trips per day.

EXHIBIT A: PROPOSED HAUL ROUTES



BEST AVAILABLE CONTROL MEASURES (BACMS)

BACM AQ-1

All applicable measures included in Rule 403, shall be incorporated into Project plans and specifications as implementation of Rule 403, which include but are not limited to (1):

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.
- The contractor shall ensure that traffic speeds on unpaved roads and Project site areas are limited to 15 miles per hour or less.
- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Project are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.

RECOMMENDED MITIGATION MEASURE

MM AQ-1

When using construction equipment greater than 150 horsepower (>150 HP), the Construction Contractor shall ensure that off-road diesel construction equipment complies with EPA/CARB Tier 4 emissions standards or equivalent and shall ensure that all construction equipment is tuned and maintained in accordance with the manufacturer's specifications.

CONSTRUCTION EMISSIONS

On October 17, 2017, the SCAQMD in conjunction with the CAPCOA and other California air districts, released the latest version of the California Emissions Estimator Model™ (CalEEMod™) v2016.3.2. The purpose of this model is to calculate construction-source and operational-source criteria pollutant (VOCs, NO_X, SO_X, CO, PM_{10}, and $PM_{2.5}$) and GHG emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (35). Accordingly, the latest version of CalEEMod™ has been used for this Project to determine construction air quality emissions.

The number of days of construction are shown on Table 1, as a conservative measure, it is anticipated that all daytime and night time activities would occur concurrently for 126 days. Equipment employed for Project construction activities are based on information provided by the project applicant, as shown on Table 2. Air quality outputs from the model runs are provided in Attachment A.

Grading

The Project is anticipated to include soil import as a part of Project construction. Based on information provided by the Project Applicant, the Project is expected require 440,000 cubic yards soil import. For

purposes of analysis, 440,000 cubic yards of import will be analyzed and with a hauling trip length of 2.8 miles.

TABLE 1: CONSTRUCTION DURATION

Phase Name	Days
Grading at Fill Site	126
Import Activity	126

TABLE 2: CONSTRUCTION EQUIPMENT (1 OF 2)

Activity	Equipment	Amount	Hours Per Day
Grading at Fill Site	Water Truck	1	8
	Rubber Tired Dozers	1	8
	Scrapers	3	8
Import Equipment at Borrow Site	Water Truck	1	8
	Street Sweeper	1	8
	Rubber Tired Dozers	1	8
	Tractors/Loaders/Backhoes	1	8

REGIONAL CONSTRUCTION EMISSIONS

Impacts without Mitigation

The estimated maximum daily regional construction emissions without mitigation are summarized on Table 3. Under the assumed scenarios, emissions resulting from the Project construction would exceed criteria pollutant thresholds established by the SCAQMD for emissions of NO_X.

Impacts with Mitigation

The estimated maximum daily regional construction emissions without mitigation are summarized on Table 4. After implementation of MM AQ-1, emissions resulting from the Project construction would not exceed criteria pollutant thresholds established by the SCAQMD for emissions of any criteria pollutant. Thus, a less than significant impact would occur for Project-related construction-source emissions with implementation of MM AQ-1.

TABLE 3: REGIONAL CONSTRUCTION EMISSIONS SUMMARY (WITHOUT MITIGATION)

Phase	Emissions (pounds per day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Daytime Activity (Grading at Fill Site)						
Grading (On-Site)	4.72	52.91	30.32	0.07	5.96	3.43
Grading (Off-Site)	0.12	0.08	0.82	2.48e-03	0.28	0.08
Total Daytime Emissions	4.85	52.99	31.13	0.07	6.24	3.51
Nighttime Activity (Import Activity)						
Import (On-Site)	2.46	25.00	14.34	0.03	4.13	2.46
Import (Off-Site)	1.40	61.52	8.69	0.11	1.42	0.44
Total Nighttime Emissions	3.85	86.52	23.04	0.14	5.55	2.90
Total Maximum Daily Emissions	**8.70**	**139.51**	**54.17**	**0.21**	**11.78**	**6.41**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**YES**	**NO**	**NO**	**NO**	**NO**

TABLE 4: REGIONAL CONSTRUCTION EMISSIONS SUMMARY (WITH MITIGATION)

Phase	Emissions (pounds per day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Daytime						
Grading (On-Site)	1.33	9.20	28.15	0.07	4.12	1.75
Grading (Off-Site)	0.12	0.08	0.82	2.48e-03	0.28	0.08
Total Daytime Emissions	1.45	9.28	28.96	0.07	4.40	1.82
Nighttime						
Import (On-Site)	1.47	14.12	14.05	0.03	3.59	1.96
Import (Off-Site)	1.40	61.52	8.69	0.11	1.42	0.44
Total Nighttime Emissions	2.87	75.64	22.74	0.14	5.01	2.40
Total Maximum Daily Emissions	**4.32**	**84.91**	**51.70**	**0.21**	**9.40**	**4.23**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

LOCALIZED SIGNIFICANCE - CONSTRUCTION ACTIVITY

BACKGROUND ON LOCALIZED SIGNIFICANCE THRESHOLD (LST) DEVELOPMENT

The analysis makes use of methodology included in the SCAQMD *Final Localized Significance Threshold Methodology* (LST Methodology) (2). The SCAQMD has established that impacts to air quality are significant if there is a potential to contribute or cause localized exceedances of the federal and/or state ambient air quality standards (NAAQS/CAAQS). Collectively, these are referred to as Localized Significance Thresholds (LSTs).

The significance of localized emissions impacts depends on whether ambient levels in the vicinity of any given project are above or below State standards. In the case of CO and NO_2, if ambient levels are below the standards, a project is considered to have a significant impact if project emissions result in an exceedance of one or more of these standards. If ambient levels already exceed a state or federal standard, then project emissions are considered significant if they increase ambient concentrations by a measurable amount. This would apply to PM_{10} and $PM_{2.5}$; both of which are non-attainment pollutants.

The SCAQMD established LSTs in response to the SCAQMD Governing Board's Environmental Justice Initiative I-4[1]. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest residence or sensitive receptor. The SCAQMD states that lead agencies can use the LSTs as another indicator of significance in its air quality impact analyses.

LSTs were developed in response to environmental justice and health concerns raised by the public regarding exposure of individuals to criteria pollutants in local communities. To address the issue of localized significance, the SCAQMD adopted LSTs that show whether a project would cause or contribute to localized air quality impacts and thereby cause or contribute to potential localized adverse health effects. The analysis makes use of methodology included in the *LST Methodology* (2).

SENSITIVE RECEPTORS

As previously stated, LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest residence or sensitive receptor. Receptor locations are off-site locations where individuals may be exposed to emissions from Project activities. This assessment analyzes localized construction emissions impacts at the nearest sensitive receptors.

Some people are especially sensitive to air pollution and are given special consideration when evaluating air quality impacts from projects. These groups of people include children, the elderly, individuals with pre-existing respiratory or cardiovascular illness, and athletes and others who engage in frequent

[1] The purpose of SCAQMD's Environmental Justice program is to ensure that everyone has the right to equal protection from air pollution and fair access to the decision-making process that works to improve the quality of air within their communities. Further, the SCAQMD defines Environmental Justice as "…equitable environmental policymaking and enforcement to protect the health of all residents, regardless of age, culture, ethnicity, gender, race, socioeconomic status, or geographic location, from the health effects of air pollution."

exercise. Structures that house these persons or places where they gather to exercise are defined as "sensitive receptors"; they are also known to be locations where an individual can remain for 24 hours.

LOCALIZED CONSTRUCTION EMISSIONS

Impacts without Mitigation

Table 5 identifies the localized impacts at the nearest receptor location in the vicinity of the Project. Without mitigation, localized construction emissions would exceed the applicable SCAQMD LSTs for emissions of PM_{10} during import activities.

TABLE 5: LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION (WITHOUT MITIGATION)

On-Site Grading Emissions	Emissions (lbs/day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	52.91	30.32	5.96	3.43
SCAQMD Localized Threshold	220	1,354	9	7
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**
On-Site Import Emissions	**Emissions (lbs/day)**			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	25.00	14.34	4.13	2.46
SCAQMD Localized Threshold	118	674	4	3
Threshold Exceeded?	**NO**	**NO**	**YES**	**NO**

Impacts with Mitigation

Table 6 identifies the localized impacts at the nearest receptor location in the vicinity of the Project. MM AQ-1 is recommended to reduce the impacts during import activities. After implementation of MM AQ-1, localized construction emissions would not exceed the applicable SCAQMD LSTs for any criteria pollutant. Therefore, a less than significant impact would occur.

TABLE 6: LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION (WITH MITIGATION)

On-Site Import Emissions	Emissions (lbs/day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	14.12	14.05	3.59	1.96
SCAQMD Localized Threshold	118	674	4	3
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**

If you have any questions, please contact me directly at (949) 336-5987.

Respectfully submitted,

URBAN CROSSROADS, INC.



Haseeb Qureshi,
Associate Principal

REFERENCES

1. **South Coat Air Quality Management District.** Rule 403. Fugitive Dust. [Online] https://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-403.pdf?sfvrsn=4.

2. **South Coast Air Quality Management District.** *Localized Significance Thresholds Methodology.* s.l. : South Coast Air Quality Managment District, 2003.

3. **Lake Environmental.** US EPA Models. *Lake Environmental.* [Online] http://www.weblakes.com/download/us_epa.html.

ATTACHMENT A:

CALEEMOD CONSTRUCTION EMISSIONS MODEL OUTPUTS

Bedford Market place (Grading & Import Activity)

Riverside-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Bank (with Drive-Through)	6.00	1000sqft	0.14	6,000.00	0
Day-Care Center	9.99	1000sqft	0.23	9,990.00	0
Fast Food Restaurant with Drive Thru	2.20	1000sqft	0.05	2,200.00	0
Health Club	38.00	1000sqft	0.87	38,000.00	0
High Turnover (Sit Down Restaurant)	5.83	1000sqft	0.13	5,830.00	0
Hotel	135.00	Room	4.50	196,020.00	0
Quality Restaurant	13.20	1000sqft	0.30	13,200.00	0
Automobile Care Center	3.60	1000sqft	0.08	3,600.00	0
Gasoline/Service Station	18.00	Pump	0.06	2,541.15	0
Regional Shopping Center	51.00	1000sqft	1.17	51,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Bedford Market place (Grading & Import Activity) - Riverside-South Coast County, Summer

Project Characteristics -

Land Use -

Construction Phase - Preliminary Run

Off-road Equipment - Preliminary Run Only.

Off-road Equipment - Preliminary Run Only.

Trips and VMT - Preliminary Run

Grading - Preliminary Run

Vehicle Trips - Preliminary Run

Area Coating -

Energy Use - Preliminary Run

Water And Wastewater - Preliminary Run

Solid Waste - Preliminary Run

Construction Off-road Equipment Mitigation - Tier 4

Fleet Mix - Preliminary Run

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	20.00	126.00
tblConstructionPhase	NumDays	10.00	126.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	3.03	0.00
tblEnergyUse	LightingElect	6.62	0.00
tblEnergyUse	LightingElect	2.93	0.00

tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	6.62	0.00
tblEnergyUse	LightingElect	5.44	0.00
tblEnergyUse	LightingElect	6.62	0.00
tblEnergyUse	LightingElect	5.61	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	1.49	0.00
tblEnergyUse	NT24E	28.48	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	28.48	0.00
tblEnergyUse	NT24E	6.23	0.00
tblEnergyUse	NT24E	28.48	0.00
tblEnergyUse	NT24E	2.44	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	1.79	0.00
tblEnergyUse	NT24NG	195.77	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	195.77	0.00
tblEnergyUse	NT24NG	4.86	0.00
tblEnergyUse	NT24NG	195.77	0.00
tblEnergyUse	NT24NG	0.30	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	2.20	0.00

tblEnergyUse	T24E	2.78	0.00
tblEnergyUse	T24E	12.38	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	12.38	0.00
tblEnergyUse	T24E	6.47	0.00
tblEnergyUse	T24E	12.38	0.00
tblEnergyUse	T24E	4.58	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	6.97	0.00
tblEnergyUse	T24NG	77.67	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	77.67	0.00
tblEnergyUse	T24NG	55.15	0.00
tblEnergyUse	T24NG	77.67	0.00
tblEnergyUse	T24NG	1.92	0.00
tblGrading	AcresOfGrading	378.00	441.00
tblGrading	AcresOfGrading	0.00	126.00
tblGrading	MaterialImported	0.00	440,000.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblSolidWaste	SolidWasteGenerationRate	13.75	0.00

tblSolidWaste	SolidWasteGenerationRate	5.60	0.00
tblSolidWaste	SolidWasteGenerationRate	12.99	0.00
tblSolidWaste	SolidWasteGenerationRate	25.34	0.00
tblSolidWaste	SolidWasteGenerationRate	9.70	0.00
tblSolidWaste	SolidWasteGenerationRate	216.60	0.00
tblSolidWaste	SolidWasteGenerationRate	69.38	0.00
tblSolidWaste	SolidWasteGenerationRate	73.91	0.00
tblSolidWaste	SolidWasteGenerationRate	12.04	0.00
tblSolidWaste	SolidWasteGenerationRate	53.55	0.00
tblTripsAndVMT	HaulingTripLength	20.00	2.80
tblTripsAndVMT	HaulingTripNumber	55,000.00	62,857.00
tblTripsAndVMT	WorkerTripNumber	13.00	25.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TTP	48.00	0.00
tblVehicleTrips	CC_TTP	74.40	0.00
tblVehicleTrips	CC_TTP	82.30	0.00
tblVehicleTrips	CC_TTP	78.80	0.00
tblVehicleTrips	CC_TTP	79.00	0.00

tblVehicleTrips	CC_TTP	64.10	0.00
tblVehicleTrips	CC_TTP	72.50	0.00
tblVehicleTrips	CC_TTP	61.60	0.00
tblVehicleTrips	CC_TTP	69.00	0.00
tblVehicleTrips	CC_TTP	64.70	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	5.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00

tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TTP	33.00	0.00
tblVehicleTrips	CW_TTP	6.60	0.00
tblVehicleTrips	CW_TTP	12.70	0.00
tblVehicleTrips	CW_TTP	2.20	0.00
tblVehicleTrips	CW_TTP	2.00	0.00
tblVehicleTrips	CW_TTP	16.90	0.00
tblVehicleTrips	CW_TTP	8.50	0.00
tblVehicleTrips	CW_TTP	19.40	0.00
tblVehicleTrips	CW_TTP	12.00	0.00
tblVehicleTrips	CW_TTP	16.30	0.00
tblVehicleTrips	DV_TP	51.00	0.00
tblVehicleTrips	DV_TP	26.00	0.00
tblVehicleTrips	DV_TP	58.00	0.00
tblVehicleTrips	DV_TP	21.00	0.00
tblVehicleTrips	DV_TP	27.00	0.00
tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	DV_TP	20.00	0.00
tblVehicleTrips	DV_TP	38.00	0.00
tblVehicleTrips	DV_TP	18.00	0.00

tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	PB_TP	28.00	0.00
tblVehicleTrips	PB_TP	47.00	0.00
tblVehicleTrips	PB_TP	14.00	0.00
tblVehicleTrips	PB_TP	50.00	0.00
tblVehicleTrips	PB_TP	59.00	0.00
tblVehicleTrips	PB_TP	9.00	0.00
tblVehicleTrips	PB_TP	43.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	44.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	21.00	0.00
tblVehicleTrips	PR_TP	27.00	0.00
tblVehicleTrips	PR_TP	28.00	0.00
tblVehicleTrips	PR_TP	29.00	0.00
tblVehicleTrips	PR_TP	14.00	0.00
tblVehicleTrips	PR_TP	52.00	0.00
tblVehicleTrips	PR_TP	37.00	0.00
tblVehicleTrips	PR_TP	58.00	0.00
tblVehicleTrips	PR_TP	38.00	0.00
tblVehicleTrips	PR_TP	54.00	0.00
tblVehicleTrips	ST_TR	23.72	0.00
tblVehicleTrips	ST_TR	86.32	0.00
tblVehicleTrips	ST_TR	6.21	0.00
tblVehicleTrips	ST_TR	722.03	0.00
tblVehicleTrips	ST_TR	168.56	0.00
tblVehicleTrips	ST_TR	20.87	0.00

tblVehicleTrips	ST_TR	158.37	0.00
tblVehicleTrips	ST_TR	8.19	0.00
tblVehicleTrips	ST_TR	94.36	0.00
tblVehicleTrips	ST_TR	49.97	0.00
tblVehicleTrips	SU_TR	11.88	0.00
tblVehicleTrips	SU_TR	31.90	0.00
tblVehicleTrips	SU_TR	5.83	0.00
tblVehicleTrips	SU_TR	542.72	0.00
tblVehicleTrips	SU_TR	168.56	0.00
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	131.84	0.00
tblVehicleTrips	SU_TR	5.95	0.00
tblVehicleTrips	SU_TR	72.16	0.00
tblVehicleTrips	SU_TR	25.24	0.00
tblVehicleTrips	WD_TR	23.72	0.00
tblVehicleTrips	WD_TR	148.15	0.00
tblVehicleTrips	WD_TR	74.06	0.00
tblVehicleTrips	WD_TR	496.12	0.00
tblVehicleTrips	WD_TR	168.56	0.00
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	127.15	0.00
tblVehicleTrips	WD_TR	8.17	0.00
tblVehicleTrips	WD_TR	89.95	0.00
tblVehicleTrips	WD_TR	42.70	0.00
tblWater	IndoorWaterUseRate	338,691.99	0.00
tblWater	IndoorWaterUseRate	237,737.51	0.00
tblWater	IndoorWaterUseRate	428,466.78	0.00

tblWater	IndoorWaterUseRate	667,774.17	0.00
tblWater	IndoorWaterUseRate	239,074.00	0.00
tblWater	IndoorWaterUseRate	2,247,439.47	0.00
tblWater	IndoorWaterUseRate	1,769,601.54	0.00
tblWater	IndoorWaterUseRate	3,424,513.95	0.00
tblWater	IndoorWaterUseRate	4,006,645.00	0.00
tblWater	IndoorWaterUseRate	3,777,698.60	0.00
tblWater	OutdoorWaterUseRate	207,585.41	0.00
tblWater	OutdoorWaterUseRate	145,710.09	0.00
tblWater	OutdoorWaterUseRate	1,101,771.72	0.00
tblWater	OutdoorWaterUseRate	42,623.88	0.00
tblWater	OutdoorWaterUseRate	146,529.23	0.00
tblWater	OutdoorWaterUseRate	1,377,462.90	0.00
tblWater	OutdoorWaterUseRate	112,953.29	0.00
tblWater	OutdoorWaterUseRate	380,501.55	0.00
tblWater	OutdoorWaterUseRate	255,743.30	0.00
tblWater	OutdoorWaterUseRate	2,315,363.66	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	8.5596	141.3347	51.9017	0.2187	18.8808	3.4266	22.3074	7.6447	3.1550	10.7997	0.0000	22,248.2881	22,248.2881	4.8698	0.0000	22,370.0340
Maximum	**8.5596**	**141.3347**	**51.9017**	**0.2187**	**18.8808**	**3.4266**	**22.3074**	**7.6447**	**3.1550**	**10.7997**	**0.0000**	**22,248.2881**	**22,248.2881**	**4.8698**	**0.0000**	**22,370.0340**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	4.1902	86.7435	49.4356	0.2187	8.3530	1.0440	9.3970	3.2510	0.9712	4.2223	0.0000	22,248.2881	22,248.2881	4.8698	0.0000	22,370.0340
Maximum	**4.1902**	**86.7435**	**49.4356**	**0.2187**	**8.3530**	**1.0440**	**9.3970**	**3.2510**	**0.9712**	**4.2223**	**0.0000**	**22,248.2881**	**22,248.2881**	**4.8698**	**0.0000**	**22,370.0340**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**51.05**	**38.63**	**4.75**	**0.00**	**55.76**	**69.53**	**57.87**	**57.47**	**69.22**	**60.90**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7.3387	2.7000e-004	0.0290	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0619	0.0619	1.6000e-004		0.0660
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**7.3387**	**2.7000e-004**	**0.0290**	**0.0000**	**0.0000**	**1.0000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**1.0000e-004**		**0.0619**	**0.0619**	**1.6000e-004**	**0.0000**	**0.0660**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7.3387	2.7000e-004	0.0290	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0619	0.0619	1.6000e-004		0.0660
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**7.3387**	**2.7000e-004**	**0.0290**	**0.0000**	**0.0000**	**1.0000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**1.0000e-004**		**0.0619**	**0.0619**	**1.6000e-004**	**0.0000**	**0.0660**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Import Activities	Site Preparation	1/1/2020	6/24/2020	5	126	
2	Grading	Grading	1/1/2020	6/24/2020	5	126	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 441

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Import Activities	Off-Highway Trucks	1	8.00	402	0.38
Import Activities	Other Construction Equipment	1	8.00	172	0.42
Import Activities	Rubber Tired Dozers	1	8.00	247	0.40
Import Activities	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Excavators	0	8.00	158	0.38
Grading	Graders	0	8.00	187	0.41
Grading	Off-Highway Trucks	1	8.00	402	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	3	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Import Activities	4	10.00	0.00	62,857.00	14.70	6.90	2.80	LD_Mix	HDT_Mix	HHDT
Grading	5	25.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Import Activities - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.5248	0.0000	7.5248	3.4917	0.0000	3.4917			0.0000			0.0000
Off-Road	2.4461	24.9992	14.3435	0.0310		1.1949	1.1949		1.0993	1.0993		3,005.5371	3,005.5371	0.9721		3,029.8384
Total	**2.4461**	**24.9992**	**14.3435**	**0.0310**	**7.5248**	**1.1949**	**8.7197**	**3.4917**	**1.0993**	**4.5910**		**3,005.5371**	**3,005.5371**	**0.9721**		**3,029.8384**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.2140	63.3189	5.8295	0.1166	1.2309	0.0689	1.2998	0.3382	0.0660	0.4042		12,350.1831	12,350.1831	1.7834		12,394.7682
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0509	0.0301	0.4032	1.1100e-003	0.1118	6.8000e-004	0.1125	0.0296	6.2000e-004	0.0303		110.1595	110.1595	2.8200e-003		110.2301
Total	**1.2649**	**63.3490**	**6.2327**	**0.1177**	**1.3427**	**0.0696**	**1.4123**	**0.3679**	**0.0666**	**0.4345**		**12,460.3425**	**12,460.3425**	**1.7862**		**12,504.9982**

3.2 Import Activities - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9347	0.0000	2.9347	1.3618	0.0000	1.3618			0.0000			0.0000
Off-Road	1.4712	14.1201	14.0454	0.0310		0.6539	0.6539		0.6027	0.6027	0.0000	3,005.5371	3,005.5371	0.9721		3,029.8384
Total	**1.4712**	**14.1201**	**14.0454**	**0.0310**	**2.9347**	**0.6539**	**3.5885**	**1.3618**	**0.6027**	**1.9644**	**0.0000**	**3,005.5371**	**3,005.5371**	**0.9721**		**3,029.8384**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.2140	63.3189	5.8295	0.1166	1.2309	0.0689	1.2998	0.3382	0.0660	0.4042		12,350.1831	12,350.1831	1.7834		12,394.7682
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0509	0.0301	0.4032	1.1100e-003	0.1118	6.8000e-004	0.1125	0.0296	6.2000e-004	0.0303		110.1595	110.1595	2.8200e-003		110.2301
Total	**1.2649**	**63.3490**	**6.2327**	**0.1177**	**1.3427**	**0.0696**	**1.4123**	**0.3679**	**0.0666**	**0.4345**		**12,460.3425**	**12,460.3425**	**1.7862**		**12,504.9982**

3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.7338	0.0000	9.7338	3.7110	0.0000	3.7110			0.0000			0.0000
Off-Road	4.7213	52.9112	30.3175	0.0672		2.1604	2.1604		1.9876	1.9876		6,507.0099	6,507.0099	2.1045		6,559.6223
Total	**4.7213**	**52.9112**	**30.3175**	**0.0672**	**9.7338**	**2.1604**	**11.8943**	**3.7110**	**1.9876**	**5.6986**		**6,507.0099**	**6,507.0099**	**2.1045**		**6,559.6223**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1272	0.0752	1.0080	2.7700e-003	0.2794	1.6900e-003	0.2811	0.0741	1.5600e-003	0.0757		275.3986	275.3986	7.0600e-003		275.5751
Total	**0.1272**	**0.0752**	**1.0080**	**2.7700e-003**	**0.2794**	**1.6900e-003**	**0.2811**	**0.0741**	**1.5600e-003**	**0.0757**		**275.3986**	**275.3986**	**7.0600e-003**		**275.5751**

3.3 Grading - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7962	0.0000	3.7962	1.4473	0.0000	1.4473			0.0000			0.0000
Off-Road	1.3269	9.1992	28.1494	0.0672		0.3189	0.3189		0.3004	0.3004	0.0000	6,507.0099	6,507.0099	2.1045		6,559.6223
Total	**1.3269**	**9.1992**	**28.1494**	**0.0672**	**3.7962**	**0.3189**	**4.1151**	**1.4473**	**0.3004**	**1.7477**	**0.0000**	**6,507.0099**	**6,507.0099**	**2.1045**		**6,559.6223**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1272	0.0752	1.0080	2.7700e-003	0.2794	1.6900e-003	0.2811	0.0741	1.5600e-003	0.0757		275.3986	275.3986	7.0600e-003		275.5751
Total	**0.1272**	**0.0752**	**1.0080**	**2.7700e-003**	**0.2794**	**1.6900e-003**	**0.2811**	**0.0741**	**1.5600e-003**	**0.0757**		**275.3986**	**275.3986**	**7.0600e-003**		**275.5751**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	0.00	0.00	0.00		
Bank (with Drive-Through)	0.00	0.00	0.00		
Day-Care Center	0.00	0.00	0.00		
Fast Food Restaurant with Drive Thru	0.00	0.00	0.00		
Gasoline/Service Station	0.00	0.00	0.00		
Health Club	0.00	0.00	0.00		
High Turnover (Sit Down Restaurant)	0.00	0.00	0.00		
Hotel	0.00	0.00	0.00		
Quality Restaurant	0.00	0.00	0.00		
Regional Shopping Center	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Bank (with Drive-Through)	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Day-Care Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Fast Food Restaurant with Drive	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Gasoline/Service Station	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Health Club	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
High Turnover (Sit Down	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Hotel	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Quality Restaurant	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
Bank (with Drive-Through)	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
Day-Care Center	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
Fast Food Restaurant with Drive Thru	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
Gasoline/Service Station	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
Health Club	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
High Turnover (Sit Down Restaurant)	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
Hotel	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
Quality Restaurant	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
Regional Shopping Center	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant with Drive Thru	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant with Drive Thru	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	7.3387	2.7000e-004	0.0290	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0619	0.0619	1.6000e-004		0.0660
Unmitigated	7.3387	2.7000e-004	0.0290	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0619	0.0619	1.6000e-004		0.0660

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.8340					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	6.5020					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.7100e-003	2.7000e-004	0.0290	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0619	0.0619	1.6000e-004		0.0660
Total	**7.3387**	**2.7000e-004**	**0.0290**	**0.0000**		**1.0000e-004**	**1.0000e-004**		**1.0000e-004**	**1.0000e-004**		**0.0619**	**0.0619**	**1.6000e-004**		**0.0660**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.8340					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	6.5020					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.7100e-003	2.7000e-004	0.0290	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0619	0.0619	1.6000e-004		0.0660
Total	**7.3387**	**2.7000e-004**	**0.0290**	**0.0000**		**1.0000e-004**	**1.0000e-004**		**1.0000e-004**	**1.0000e-004**		**0.0619**	**0.0619**	**1.6000e-004**		**0.0660**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Bedford Market place (Grading & Import Activity)

Riverside-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Bank (with Drive-Through)	6.00	1000sqft	0.14	6,000.00	0
Day-Care Center	9.99	1000sqft	0.23	9,990.00	0
Fast Food Restaurant with Drive Thru	2.20	1000sqft	0.05	2,200.00	0
Health Club	38.00	1000sqft	0.87	38,000.00	0
High Turnover (Sit Down Restaurant)	5.83	1000sqft	0.13	5,830.00	0
Hotel	135.00	Room	4.50	196,020.00	0
Quality Restaurant	13.20	1000sqft	0.30	13,200.00	0
Automobile Care Center	3.60	1000sqft	0.08	3,600.00	0
Gasoline/Service Station	18.00	Pump	0.06	2,541.15	0
Regional Shopping Center	51.00	1000sqft	1.17	51,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Bedford Market place (Grading & Import Activity) - Riverside-South Coast County, Winter

Project Characteristics -

Land Use -

Construction Phase - Preliminary Run

Off-road Equipment - Preliminary Run Only.

Off-road Equipment - Preliminary Run Only.

Trips and VMT - Preliminary Run

Grading - Preliminary Run

Vehicle Trips - Preliminary Run

Area Coating -

Energy Use - Preliminary Run

Water And Wastewater - Preliminary Run

Solid Waste - Preliminary Run

Construction Off-road Equipment Mitigation - Tier 4

Fleet Mix - Preliminary Run

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	20.00	126.00
tblConstructionPhase	NumDays	10.00	126.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	3.03	0.00
tblEnergyUse	LightingElect	6.62	0.00
tblEnergyUse	LightingElect	2.93	0.00

tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	6.62	0.00
tblEnergyUse	LightingElect	5.44	0.00
tblEnergyUse	LightingElect	6.62	0.00
tblEnergyUse	LightingElect	5.61	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	1.49	0.00
tblEnergyUse	NT24E	28.48	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	28.48	0.00
tblEnergyUse	NT24E	6.23	0.00
tblEnergyUse	NT24E	28.48	0.00
tblEnergyUse	NT24E	2.44	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	1.79	0.00
tblEnergyUse	NT24NG	195.77	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	195.77	0.00
tblEnergyUse	NT24NG	4.86	0.00
tblEnergyUse	NT24NG	195.77	0.00
tblEnergyUse	NT24NG	0.30	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	2.20	0.00

tblEnergyUse	T24E	2.78	0.00
tblEnergyUse	T24E	12.38	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	12.38	0.00
tblEnergyUse	T24E	6.47	0.00
tblEnergyUse	T24E	12.38	0.00
tblEnergyUse	T24E	4.58	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	6.97	0.00
tblEnergyUse	T24NG	77.67	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	77.67	0.00
tblEnergyUse	T24NG	55.15	0.00
tblEnergyUse	T24NG	77.67	0.00
tblEnergyUse	T24NG	1.92	0.00
tblGrading	AcresOfGrading	378.00	441.00
tblGrading	AcresOfGrading	0.00	126.00
tblGrading	MaterialImported	0.00	440,000.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblSolidWaste	SolidWasteGenerationRate	13.75	0.00

Bedford Market place (Grading & Import Activity) - Riverside-South Coast County, Winter

tblSolidWaste	SolidWasteGenerationRate	5.60	0.00
tblSolidWaste	SolidWasteGenerationRate	12.99	0.00
tblSolidWaste	SolidWasteGenerationRate	25.34	0.00
tblSolidWaste	SolidWasteGenerationRate	9.70	0.00
tblSolidWaste	SolidWasteGenerationRate	216.60	0.00
tblSolidWaste	SolidWasteGenerationRate	69.38	0.00
tblSolidWaste	SolidWasteGenerationRate	73.91	0.00
tblSolidWaste	SolidWasteGenerationRate	12.04	0.00
tblSolidWaste	SolidWasteGenerationRate	53.55	0.00
tblTripsAndVMT	HaulingTripLength	20.00	2.80
tblTripsAndVMT	HaulingTripNumber	55,000.00	62,857.00
tblTripsAndVMT	WorkerTripNumber	13.00	25.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TTP	48.00	0.00
tblVehicleTrips	CC_TTP	74.40	0.00
tblVehicleTrips	CC_TTP	82.30	0.00
tblVehicleTrips	CC_TTP	78.80	0.00
tblVehicleTrips	CC_TTP	79.00	0.00

tblVehicleTrips	CC_TTP	64.10	0.00
tblVehicleTrips	CC_TTP	72.50	0.00
tblVehicleTrips	CC_TTP	61.60	0.00
tblVehicleTrips	CC_TTP	69.00	0.00
tblVehicleTrips	CC_TTP	64.70	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	5.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00

tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TTP	33.00	0.00
tblVehicleTrips	CW_TTP	6.60	0.00
tblVehicleTrips	CW_TTP	12.70	0.00
tblVehicleTrips	CW_TTP	2.20	0.00
tblVehicleTrips	CW_TTP	2.00	0.00
tblVehicleTrips	CW_TTP	16.90	0.00
tblVehicleTrips	CW_TTP	8.50	0.00
tblVehicleTrips	CW_TTP	19.40	0.00
tblVehicleTrips	CW_TTP	12.00	0.00
tblVehicleTrips	CW_TTP	16.30	0.00
tblVehicleTrips	DV_TP	51.00	0.00
tblVehicleTrips	DV_TP	26.00	0.00
tblVehicleTrips	DV_TP	58.00	0.00
tblVehicleTrips	DV_TP	21.00	0.00
tblVehicleTrips	DV_TP	27.00	0.00
tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	DV_TP	20.00	0.00
tblVehicleTrips	DV_TP	38.00	0.00
tblVehicleTrips	DV_TP	18.00	0.00

tblVehicleTrips	DV_TP	35.00	0.00
tblVehicleTrips	PB_TP	28.00	0.00
tblVehicleTrips	PB_TP	47.00	0.00
tblVehicleTrips	PB_TP	14.00	0.00
tblVehicleTrips	PB_TP	50.00	0.00
tblVehicleTrips	PB_TP	59.00	0.00
tblVehicleTrips	PB_TP	9.00	0.00
tblVehicleTrips	PB_TP	43.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	44.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PR_TP	21.00	0.00
tblVehicleTrips	PR_TP	27.00	0.00
tblVehicleTrips	PR_TP	28.00	0.00
tblVehicleTrips	PR_TP	29.00	0.00
tblVehicleTrips	PR_TP	14.00	0.00
tblVehicleTrips	PR_TP	52.00	0.00
tblVehicleTrips	PR_TP	37.00	0.00
tblVehicleTrips	PR_TP	58.00	0.00
tblVehicleTrips	PR_TP	38.00	0.00
tblVehicleTrips	PR_TP	54.00	0.00
tblVehicleTrips	ST_TR	23.72	0.00
tblVehicleTrips	ST_TR	86.32	0.00
tblVehicleTrips	ST_TR	6.21	0.00
tblVehicleTrips	ST_TR	722.03	0.00
tblVehicleTrips	ST_TR	168.56	0.00
tblVehicleTrips	ST_TR	20.87	0.00

tblVehicleTrips	ST_TR	158.37	0.00
tblVehicleTrips	ST_TR	8.19	0.00
tblVehicleTrips	ST_TR	94.36	0.00
tblVehicleTrips	ST_TR	49.97	0.00
tblVehicleTrips	SU_TR	11.88	0.00
tblVehicleTrips	SU_TR	31.90	0.00
tblVehicleTrips	SU_TR	5.83	0.00
tblVehicleTrips	SU_TR	542.72	0.00
tblVehicleTrips	SU_TR	168.56	0.00
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	131.84	0.00
tblVehicleTrips	SU_TR	5.95	0.00
tblVehicleTrips	SU_TR	72.16	0.00
tblVehicleTrips	SU_TR	25.24	0.00
tblVehicleTrips	WD_TR	23.72	0.00
tblVehicleTrips	WD_TR	148.15	0.00
tblVehicleTrips	WD_TR	74.06	0.00
tblVehicleTrips	WD_TR	496.12	0.00
tblVehicleTrips	WD_TR	168.56	0.00
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	127.15	0.00
tblVehicleTrips	WD_TR	8.17	0.00
tblVehicleTrips	WD_TR	89.95	0.00
tblVehicleTrips	WD_TR	42.70	0.00
tblWater	IndoorWaterUseRate	338,691.99	0.00
tblWater	IndoorWaterUseRate	237,737.51	0.00
tblWater	IndoorWaterUseRate	428,466.78	0.00

tblWater	IndoorWaterUseRate	667,774.17	0.00
tblWater	IndoorWaterUseRate	239,074.00	0.00
tblWater	IndoorWaterUseRate	2,247,439.47	0.00
tblWater	IndoorWaterUseRate	1,769,601.54	0.00
tblWater	IndoorWaterUseRate	3,424,513.95	0.00
tblWater	IndoorWaterUseRate	4,006,645.00	0.00
tblWater	IndoorWaterUseRate	3,777,698.60	0.00
tblWater	OutdoorWaterUseRate	207,585.41	0.00
tblWater	OutdoorWaterUseRate	145,710.09	0.00
tblWater	OutdoorWaterUseRate	1,101,771.72	0.00
tblWater	OutdoorWaterUseRate	42,623.88	0.00
tblWater	OutdoorWaterUseRate	146,529.23	0.00
tblWater	OutdoorWaterUseRate	1,377,462.90	0.00
tblWater	OutdoorWaterUseRate	112,953.29	0.00
tblWater	OutdoorWaterUseRate	380,501.55	0.00
tblWater	OutdoorWaterUseRate	255,743.30	0.00
tblWater	OutdoorWaterUseRate	2,315,363.66	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	8.6895	139.5056	54.1682	0.2088	18.8808	3.4320	22.3127	7.6447	3.1602	10.8049	0.0000	21,200.4337	21,200.4337	5.0959	0.0000	21,327.8321
Maximum	**8.6895**	**139.5056**	**54.1682**	**0.2088**	**18.8808**	**3.4320**	**22.3127**	**7.6447**	**3.1602**	**10.8049**	**0.0000**	**21,200.4337**	**21,200.4337**	**5.0959**	**0.0000**	**21,327.8321**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	4.3202	84.9144	51.7021	0.2088	8.3530	1.0494	9.4024	3.2510	0.9764	4.2274	0.0000	21,200.4337	21,200.4337	5.0959	0.0000	21,327.8321
Maximum	**4.3202**	**84.9144**	**51.7021**	**0.2088**	**8.3530**	**1.0494**	**9.4024**	**3.2510**	**0.9764**	**4.2274**	**0.0000**	**21,200.4337**	**21,200.4337**	**5.0959**	**0.0000**	**21,327.8321**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**50.28**	**39.13**	**4.55**	**0.00**	**55.76**	**69.42**	**57.86**	**57.47**	**69.10**	**60.88**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7.3387	2.7000e-004	0.0290	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0619	0.0619	1.6000e-004		0.0660
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**7.3387**	**2.7000e-004**	**0.0290**	**0.0000**	**0.0000**	**1.0000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**1.0000e-004**		**0.0619**	**0.0619**	**1.6000e-004**	**0.0000**	**0.0660**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7.3387	2.7000e-004	0.0290	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0619	0.0619	1.6000e-004		0.0660
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**7.3387**	**2.7000e-004**	**0.0290**	**0.0000**	**0.0000**	**1.0000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**1.0000e-004**		**0.0619**	**0.0619**	**1.6000e-004**	**0.0000**	**0.0660**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Import Activities	Site Preparation	1/1/2020	6/24/2020	5	126	
2	Grading	Grading	1/1/2020	6/24/2020	5	126	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 441

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Import Activities	Off-Highway Trucks	1	8.00	402	0.38
Import Activities	Other Construction Equipment	1	8.00	172	0.42
Import Activities	Rubber Tired Dozers	1	8.00	247	0.40
Import Activities	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Excavators	0	8.00	158	0.38
Grading	Graders	0	8.00	187	0.41
Grading	Off-Highway Trucks	1	8.00	402	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	3	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Import Activities	4	10.00	0.00	62,857.00	14.70	6.90	2.80	LD_Mix	HDT_Mix	HHDT
Grading	5	25.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Import Activities - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.5248	0.0000	7.5248	3.4917	0.0000	3.4917			0.0000			0.0000
Off-Road	2.4461	24.9992	14.3435	0.0310		1.1949	1.1949		1.0993	1.0993		3,005.5371	3,005.5371	0.9721		3,029.8384
Total	**2.4461**	**24.9992**	**14.3435**	**0.0310**	**7.5248**	**1.1949**	**8.7197**	**3.4917**	**1.0993**	**4.5910**		**3,005.5371**	**3,005.5371**	**0.9721**		**3,029.8384**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.3476	61.4861	8.3656	0.1071	1.2309	0.0743	1.3052	0.3382	0.0711	0.4093		11,342.0042	11,342.0042	2.0108		11,392.2741
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0498	0.0311	0.3262	9.9000e-004	0.1118	6.8000e-004	0.1125	0.0296	6.2000e-004	0.0303		98.8236	98.8236	2.4500e-003		98.8849
Total	**1.3975**	**61.5173**	**8.6918**	**0.1081**	**1.3427**	**0.0750**	**1.4176**	**0.3679**	**0.0717**	**0.4396**		**11,440.8278**	**11,440.8278**	**2.0132**		**11,491.1590**

3.2 Import Activities - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9347	0.0000	2.9347	1.3618	0.0000	1.3618			0.0000			0.0000
Off-Road	1.4712	14.1201	14.0454	0.0310		0.6539	0.6539		0.6027	0.6027	0.0000	3,005.5371	3,005.5371	0.9721		3,029.8384
Total	**1.4712**	**14.1201**	**14.0454**	**0.0310**	**2.9347**	**0.6539**	**3.5885**	**1.3618**	**0.6027**	**1.9644**	**0.0000**	**3,005.5371**	**3,005.5371**	**0.9721**		**3,029.8384**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.3476	61.4861	8.3656	0.1071	1.2309	0.0743	1.3052	0.3382	0.0711	0.4093		11,342.0042	11,342.0042	2.0108		11,392.2741
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0498	0.0311	0.3262	9.9000e-004	0.1118	6.8000e-004	0.1125	0.0296	6.2000e-004	0.0303		98.8236	98.8236	2.4500e-003		98.8849
Total	**1.3975**	**61.5173**	**8.6918**	**0.1081**	**1.3427**	**0.0750**	**1.4176**	**0.3679**	**0.0717**	**0.4396**		**11,440.8278**	**11,440.8278**	**2.0132**		**11,491.1590**

3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.7338	0.0000	9.7338	3.7110	0.0000	3.7110			0.0000			0.0000
Off-Road	4.7213	52.9112	30.3175	0.0672		2.1604	2.1604		1.9876	1.9876		6,507.0099	6,507.0099	2.1045		6,559.6223
Total	**4.7213**	**52.9112**	**30.3175**	**0.0672**	**9.7338**	**2.1604**	**11.8943**	**3.7110**	**1.9876**	**5.6986**		**6,507.0099**	**6,507.0099**	**2.1045**		**6,559.6223**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1246	0.0778	0.8154	2.4800e-003	0.2794	1.6900e-003	0.2811	0.0741	1.5600e-003	0.0757		247.0590	247.0590	6.1400e-003		247.2124
Total	**0.1246**	**0.0778**	**0.8154**	**2.4800e-003**	**0.2794**	**1.6900e-003**	**0.2811**	**0.0741**	**1.5600e-003**	**0.0757**		**247.0590**	**247.0590**	**6.1400e-003**		**247.2124**

3.3 Grading - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7962	0.0000	3.7962	1.4473	0.0000	1.4473			0.0000			0.0000
Off-Road	1.3269	9.1992	28.1494	0.0672		0.3189	0.3189		0.3004	0.3004	0.0000	6,507.0099	6,507.0099	2.1045		6,559.6223
Total	**1.3269**	**9.1992**	**28.1494**	**0.0672**	**3.7962**	**0.3189**	**4.1151**	**1.4473**	**0.3004**	**1.7477**	**0.0000**	**6,507.0099**	**6,507.0099**	**2.1045**		**6,559.6223**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1246	0.0778	0.8154	2.4800e-003	0.2794	1.6900e-003	0.2811	0.0741	1.5600e-003	0.0757		247.0590	247.0590	6.1400e-003		247.2124
Total	**0.1246**	**0.0778**	**0.8154**	**2.4800e-003**	**0.2794**	**1.6900e-003**	**0.2811**	**0.0741**	**1.5600e-003**	**0.0757**		**247.0590**	**247.0590**	**6.1400e-003**		**247.2124**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	0.00	0.00	0.00		
Bank (with Drive-Through)	0.00	0.00	0.00		
Day-Care Center	0.00	0.00	0.00		
Fast Food Restaurant with Drive Thru	0.00	0.00	0.00		
Gasoline/Service Station	0.00	0.00	0.00		
Health Club	0.00	0.00	0.00		
High Turnover (Sit Down Restaurant)	0.00	0.00	0.00		
Hotel	0.00	0.00	0.00		
Quality Restaurant	0.00	0.00	0.00		
Regional Shopping Center	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Bank (with Drive-Through)	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Day-Care Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Fast Food Restaurant with Drive	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Gasoline/Service Station	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Health Club	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
High Turnover (Sit Down	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Hotel	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Quality Restaurant	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
Bank (with Drive-Through)	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
Day-Care Center	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
Fast Food Restaurant with Drive Thru	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
Gasoline/Service Station	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
Health Club	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
High Turnover (Sit Down Restaurant)	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
Hotel	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
Quality Restaurant	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038
Regional Shopping Center	0.542116	0.037578	0.185203	0.118503	0.016241	0.005141	0.017392	0.068695	0.001383	0.001183	0.004582	0.000945	0.001038

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant with Drive Thru	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Bank (with Drive-Through)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Day-Care Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant with Drive Thru	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Gasoline/Service Station	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
High Turnover (Sit Down Restaurant)	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Hotel	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	7.3387	2.7000e-004	0.0290	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0619	0.0619	1.6000e-004		0.0660
Unmitigated	7.3387	2.7000e-004	0.0290	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0619	0.0619	1.6000e-004		0.0660

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.8340					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	6.5020					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.7100e-003	2.7000e-004	0.0290	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0619	0.0619	1.6000e-004		0.0660
Total	**7.3387**	**2.7000e-004**	**0.0290**	**0.0000**		**1.0000e-004**	**1.0000e-004**		**1.0000e-004**	**1.0000e-004**		**0.0619**	**0.0619**	**1.6000e-004**		**0.0660**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.8340					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	6.5020					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.7100e-003	2.7000e-004	0.0290	0.0000		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		0.0619	0.0619	1.6000e-004		0.0660
Total	**7.3387**	**2.7000e-004**	**0.0290**	**0.0000**		**1.0000e-004**	**1.0000e-004**		**1.0000e-004**	**1.0000e-004**		**0.0619**	**0.0619**	**1.6000e-004**		**0.0660**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX C-1:

Biological Technical Report

This Page Intentionally Left Blank

Biological Technical Report for the Bedford Marketplace Project

***Prepared for*:**

Guardian Capital
5780 Fleet Street, Suite 225
Carlsbad, CA 92008
Contact: Glen Powles



***Prepared by*:**

Carlson Strategic Land Solutions
327134A Paseo Espada, Suite 323
San Juan Capistrano, CA 92675
Phone: (949) 542-7042
Contact: Brianna Bernard

October 2019

TABLE OF CONTENTS

Acronyms, Abbreviations, and Glossary of Terms iv

1.0 Introduction **6**

1.1 Purpose and Approach 6
1.2 Project Terms 6
1.3 Project Location 6
1.4 Existing and Historical Land Use 7

2.0 Project Description **8**

3.0 Regulatory Context **9**

3.1 Federal Laws and Regulations 9
3.2 California State Laws and Regulations 9
3.3 Local Plans/Regulations 9
3.4 Regulatory Permits 9

4.0 Survey and Methods **10**

4.1 Literature Review 10
4.1.1 Sensitive Plant Communities 10
4.1.2 Critical Habitat 10
4.1.3 Special Status Plants and Wildlife 11
4.1.4 Jurisdictional Waters 13
4.1.5 MSHCP Assessment 13
4.2 Biological Survey 14
4.2.1 General Biological Survey 14
4.3 Focused Burrowing Owl Survey 15
4.4 Jurisdictional Delineation 15

5.0 Results **17**

5.1 Vegetation Communities 17
5.1.1 Riversidian Sage Scrub/Chaparral 18
5.1.2 Widened and Restored Wash 18
5.1.3 Ruderal 18
5.1.4 Developed/Disturbed 19
5.2 Plants 19
5.3 Critical Habitat 20
5.4 Wildlife 20
5.4.1 Wildlife Species Observed or Detected 23

5.5 Focused Burrowing Owl Survey 24
5.6 Regional Connectivity/Wildlife Movement 24
5.6.1 Wildlife Movement within the Study Area 26
5.7 Jurisdictional Areas 26
5.7.1 Waters of the United States 26
5.7.2 Waters of the State 27
5.7.3 MSHCP Riparian/Riverine and Vernal Pool Assessment 27
5.8 MSHCP Assessment 28
5.9 Soils Mapping 28

6.0 Project Impacts 30

6.1 Impacts to Vegetation Communities/Habitats 30
6.1.1 Total Project Impacts with Alternative 1: Off-site Dirt Import 31
6.1.2 Total Project Impacts with Alternative 2: PA 14 Dirt Import 32
6.2 Potential Impacts to Special Status Plants 33
6.3 Potential Impacts to Critical Habitat 33
6.4 Potential Impacts to Special Status Wildlife 33
6.5 Potential Impacts to Wildlife Movement 36
6.6 Potential Impacts to Jurisdictional Features 36
6.7 Potential Impacts to MSHCP Features 38

7.0 BMPs/PDFs Incorporated into the Project and MMRP 39

8.0 Significance Determination and Proposed Mitigation 40

8.1 Threshold No. 1 40
8.2 Threshold No. 2 41
8.3 Threshold No. 3 42
8.4 Threshold No. 4 42
8.5 Threshold No. 5 43
8.6 Threshold No. 6 43

9.0 Cumulative Impacts 45

10.0 Literature Cited 46

TABLES

Table 1. Vegetation Community Observed within the Project Site[1] 18
Table 2. Jurisdictional Waters of the United States within the Project site 26
Table 3. Jurisdictional Waters of the State within the Project Site 27
Table 4. Riparian/Riverine Habitat 28

Table 5. Total Project Impacts with Alternative 1: Off-site Dirt Import – On-Site Vegetation Community Impacts 31
Table 6. Total Project Impacts with Alternative 2: PA 14 Dirt Import – On-Site Vegetation Community Impacts[1] 32
Table 7. Impact Analysis Summary for Special Status Species 34

FIGURES

Figure 1 Regional Map
Figure 2 Project Vicinity Map
Figure 3 CNDDB Occurrences
Figure 4 Critical Habitat and MSHCP Overlays Results
Figure 5 Vegetation Map
Figure 6 Jurisdictional Delineation
Figure 7 MSHCP Riparian/Riverine Features
Figure 8 Soils Map
Figure 9 Alternative 1: Off-site Dirt Import Vegetation Impacts Map
Figure 10 Alternative 2: PA 14 Dirt Import Vegetation Impacts Map
Figure 11 Alternative 1: Off-site Dirt Import Jurisdictional and MSHCP Feature Impacts
Figure 12 Alternative 2: PA 14 Dirt Import Jurisdictional and MSHCP Feature Impacts

APPENDICES

Appendix A Focused Survey Results
- Focused Burrowing Owl Report

Appendix B Representative Photographs of Community Classification

Appendix C Special Status Plant Species Potential Occurrence Determination

Appendix D Plant Species Recorded During the Field Surveys

Appendix E Special Status Wildlife Species Potential Occurrence Determination

ACRONYMS, ABBREVIATIONS, AND GLOSSARY OF TERMS

Applicant	Bedford Marketplace, LLC
BLM	United States Bureau of Land Management
BMPs	Best Management Practices
CAGN	coastal California gnatcatcher
CDF	California Department of Forestry and Fire Protection
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Corps	United States Army Corps of Engineers
CRPR	California Rare Plant Rank
CWA	Clean Water Act
FESA	Federal Endangered Species Act
FGC	California Fish and Game Code
GIS	Geographic Information System
GPS	Global Positioning System
LBV	least Bell's vireo
MBTA	Migratory Bird Treaty Act
MMRP	Mitigation, Monitoring, and Reporting Program
MSHCP	Western Riverside Multiple Species Habitat Conservation Plan
MSL	mean sea level
NEPA	National Environmental Protection Act
NHD	National Hydrography Dataset
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OHWM	Ordinary High-Water Mark
Project	Bedford Marketplace Project
RWQCB	Regional Water Quality Control Board
SAA	Section 1600 Streambed Alteration Agreement

SLS	Carlson Strategic Land Solutions
SWPPP	Storm Water Pollution Prevention Plan
U.S.	United States
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WQC	Section 401 Water Quality Certification

1.0 Introduction

On behalf of Bedford Marketplace, LLC (Applicant), Carlson Strategic Land Solutions (SLS) prepared this Biological Technical Report for the proposed Bedford Marketplace Project (Project) located on approximately 18 acres in the City of Corona. The Biological Technical Report for the approximately 18-acre Project site and the surrounding 500-feet, collectively known as the "Study Area," incorporates the findings from field surveys conducted on June 27, 2019; and a total of four focused Burrowing Owl Surveys conducted in June, July, and August 2019 (Appendix A).

1.1 Purpose and Approach

This report provides a summary of the conditions present during the 2019 field surveys, an assessment of the potential presence of sensitive biological resources, an analysis of the potential impacts to those resources due to Project implementation, and proposed mitigation. This report describes the current biological resources present within the Study Area including habitat communities, jurisdictional waters, and the potential occurrence of listed and special status plant and wildlife species. The potential biological significance of site construction and development in view of federal, state, and local laws and regulations are also identified in this report. The report also recommends, as appropriate, Best Management Practices (BMPs) and avoidance and minimization measures to reduce or avoid potential impacts. While general biological resources are discussed, the focus of this assessment is on those resources considered to be sensitive. This report was prepared based upon results of a literature review and field surveys.

1.2 Project Terms

The following terms will be used throughout this document and are defined as follows:

- Project site: the approximately 18-acre Bedford Marketplace Project site.
- Study Area: the area evaluated during the field survey, including the approximately 18-acre Project site and the surrounding 500-feet area.
- Project Vicinity: intended to be a general term to describe the broader area surrounding the Study Area.

1.3 Project Location

The Project Site is located in the Bedford Canyon area of the Santa Ana Mountain foothills in the southeastern portion of Corona. The City of Corona is generally situated southwest of the City of Riverside, south of the City of Norco, and north of the City of Lake Elsinore in Riverside County, California (Figure 1). Areas surrounding the Project Site include the I-15 freeway to the east, Arantine Hills Specific Plan to the south and west; and Cajalco Road to the north (Figure 2). The

Project Site is located within the United States Geological Survey (USGS) 7.5-Minute Topographic Map *Corona South* Quadrangle.

The Project Site is owned by the Riverside County Transportation Commission and has Assessor's Parcel Numbers (APN) 279-240-033 and 279-240-019.

Access to the Project site is from the residential project referred to as Bedford, located to the west of the Project site, off Eagle Glen Parkway via Hudson House Drive. Directions to the Project site from Interstate 15 (I-15) is to exit Cajalco Road and head west onto Eagle Glen Parkway. Access is obtained via Hudson House Drive.

1.4 Existing and Historical Land Use

The overall Study Area has historically been farmed for citrus production between 1962 and 2007. Prior to the 1962 aerial photograph, the Project Site was vacant land. The former agricultural operation has reverted to ruderal vegetation. The Project site is located between the new residential community of Bedford within the Arantine Hills Specific Plan (AHSP), which has been graded, and the I-15 freeway, including the Cajalco Interchange, which is currently under construction.

Bedford Canyon Wash, located to the south of the Project Site, is an ephemeral wash with a sandy bottom and sparsely vegetated alluvial fan sage scrub and non-native vegetation. The Wash receives flows from the Santa Ana mountains, through the Eagle Glen Golf Club, through the AHSP area, continuing downstream to Temescal Creek and ultimately the Santa Ana River. As part of implementation of the AHSP, Bedford Wash has been widened and improved with buried rip-rap along the banks and buried grade control structures to control erosion and scour. Two concrete crossings (upstream and downstream) provide access to the south side of the Wash and the associated maintenance access road. Restoration of Bedford Wash includes planting with an alluvial fan sage scrub seed mix.

2.0 Project Description

The intent of the Project is to incorporate the approximate 18 acres into the existing Arantine Hills Specific Plan (AHSP) and build a new commercial center. The Project site, currently owned by the Riverside County Transportation Commission (RCTC), would increase the size of the planned commercial center within the Arantine Hills Specific Plan.

The Applicant proposes to amend the Arantine Hills Specific Plan (AHSP Amendment No. 3) to increase the boundary of the AHSP by approximately 18 acres (Project Site). The proposal would also increase the area designated Commercial in the AHSP to approximately 22 acres and increase the amount of commercial use from 80,000 square feet to approximately 134,378 square feet plus a 135-room hotel.

Project implementation includes two alternatives for construction and the importing of dirt for grading operations.

Import Alternative 1: The first option to import dirt onsite is by truck from an off-site source. A potential source of import (Borrow Site) has been identified from the FST Sand and Gravel Mine, located east of I-15 and approximately ½ mile east of El Cerrito Road. The dirt would be hauled from the Borrow Site to the Project site.

Import Alternative 2: The second option to import dirt to onsite involves importing dirt from Planning Area 14 (PA 14) within the Arantine Hills Specific Plan (AHSP). PA 14, approximately 26 acres, is located south of Bedford Canyon Wash and forms an elevated plateau above Bedford Canyon Wash.

To import dirt from PA 14, an access ramp would be graded in the northeast portion of PA 14 leading down to the existing concrete crossing of Bedford Canyon Wash. Grading the access ramp would require creating a notch in the existing bluff with side slopes. The lower portion of the access ramp would be steeper and reinforced with geo-grid or similar stabilizer. Fill, ranging from 5 feet to 10 feet would be temporarily placed on top of the existing concrete pad crossing Bedford Canyon Wash to both protect the concrete pad and function as a ramp to gain elevation.

Careful grading operations and BMPs would avoid dirt spoils in Bedford Wash. While this import operation would need to take place during the dry season, temporary pipe culverts would be placed on top of the concrete pad under the dirt ramp in case unexpected monsoonal storms caused Bedford Canyon Wash to flow.

Following completion of the import, the temporary dirt bridge and culverts would be removed from the concrete pad crossing Bedford Canyon Wash and the notch in the bluff for the access ramp would be reconstructed at 2:1 slopes and surface terrace drains would be added to control storm runoff to minimize erosion. The graded slopes would be replanted with a native coastal sage scrub mix.

3.0 Regulatory Context

The following is a list of the key local, state, and federal laws and regulations that apply to protecting plant communities, plants, wildlife, and water quality from project impacts relevant to the Project.

3.1 Federal Laws and Regulations

- Federal Endangered Species Act (FESA)
- Federal Clean Water Act (CWA)
- Migratory Bird Treaty Act (MBTA)

3.2 California State Laws and Regulations

- California Environmental Quality Act (CEQA)
- California Endangered Species Act (CESA) and Fish and Game Code (FGC) sections 2050 et seq.
- Lake and Streambed Alteration Program – FGC sections 1600-1616
- Porter-Cologne Water Quality Act – California Code, Division 7
- Migratory Birds – FGC section 3513
- Nongame Birds – FGC section 3800 (a)
- Native Plant Protection Act (NPPA) – FGC sections 1900-1913

3.3 Local Plans/Regulations

- City of Corona General Plan
- Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP): Temescal Canyon Area Plan

3.4 Regulatory Permits

This report is prepared pursuant to and in support of CEQA, and any applicable regulatory permit applications, including the California Department of Fish and Wildlife (CDFW) Streambed Alteration Agreement (SAA), Regional Water Quality Control Board (RWQCB) Section 401 Water Quality Certification (WQC), United States Army Corps of Engineers (Corps) Section 404 permit, and United States Fish and Wildlife Service Section 7 Biological Opinion.

4.0 Survey and Methods

Preparation for this biological study began with a review of relevant available literature and review of historical biological documentation. This effort was followed by an onsite field survey on June 27, 2019. The purpose of the field survey was to assess the existing habitat, map any onsite sensitive plant communities and jurisdictional waters, and determine whether special status plant and wildlife species occur or potentially occur within the Study Area.

4.1 Literature Review

The study began with a review of relevant available literature on the biological resources within the Study Area and Project Vicinity. The Project site is located within the boundary of the Western Riverside MSHCP, specifically within the Temescal Canyon Area Plan.

4.1.1 Sensitive Plant Communities

Sensitive plant communities (sensitive habitats) are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects. Sensitive habitats are often threatened with local extirpation and are therefore considered valuable biological resources. Plant communities are considered “sensitive” by the California Native Plant Society (CNPS) and CDFW if they meet any of the criteria listed below.

- The habitat is recognized and considered sensitive by CDFW, United States Fish and Wildlife Service (USFWS), and/or special interest groups such as CNPS.
- The habitat is under the jurisdiction of the Corps pursuant to Section 404 of the CWA.
- The habitat is under the jurisdiction of the CDFW pursuant to Sections 1600 through 1612 of the California Fish and Game Code.
- The habitat is known or believed to be of high priority for inventory in the California Natural Diversity Database (CNDDB).
- The habitat is considered regionally rare.
- The habitat has undergone a large-scale reduction due to increased encroachment and development.
- The habitat supports special status plant and/or wildlife species (defined below).
- The habitat functions as an important corridor for wildlife movement.

4.1.2 Critical Habitat

Under the ESA, the federal government is required to designate "critical habitat" for any species it lists under the ESA. Federal agencies are prohibited from authorizing, funding or carrying out actions that "destroy or adversely modify" critical habitats. Section 3 of the ESA defines critical habitat as:

- The specific areas within the geographic area occupied by a species, at the time it is listed in accordance with the ESA, on which are found those physical or biological features essential to the conservation of the species and that may require special management considerations or protection.

- The specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

"Conservation" means the use of all methods and procedures that are necessary to bring an endangered or a threatened species to the point at which listing under the ESA is no longer necessary. Critical habitat receives protection under Section 7(a)(2) of the ESA through the prohibition against destruction or adverse modification of critical habitat with regard to actions carried out, funded, or authorized by a federal agency. Section 7(a)(2) also requires conferences on federal actions that are likely to result in the destruction or adverse modification of proposed critical habitat.

The USFWS's online service for information regarding Threatened and Endangered Species Final Critical Habitat designation within California was reviewed to determine if the Study Area is within any species' designated Critical Habitat (USFWS 2019a). The USFWS regulatory mapping process for the designation of critical habitat is an imprecise, broad-based, mapping exercise of areas that may or may not include constituent elements of the critical habitat designation. Due to this approach in mapping, large areas are designated as critical habitat regardless of the existing habitat, and as a result may include developed areas, such as buildings, roads, hardscape, and other such facilities, as well as natural habitats.

The constituent elements of the critical habitat designation consider the physical and biological features needed for life processes and successful reproduction of the listed species, including:

- Space for individual and population growth for normal behavior;
- Habitat cover or shelter;
- Food, water, or other nutritional or physiological requirements;
- Sites for breeding and rearing offspring; and
- Habitat that is protected from disturbance or is representative of the historical geographic and ecological distribution of a species.

4.1.3 Special Status Plants and Wildlife

Species of plants and animals are afforded "special status" by federal agencies, state agencies, and/or non-governmental organizations (e.g., USFWS, CDFW, and USFS, and CDF) because of their recognized rarity, potential vulnerability to extinction, and local importance. These species typically have a limited geographic range and/or limited habitat and are referred to collectively as "special status" species. Plant and wildlife species are considered "special status" species if they meet any of the following criteria.

- Taxa with official status under ESA, CESA, and/or the NPPA.
- Taxa proposed for listing under ESA and/or CESA.
- Taxa designated a species of special concern by CDFW.
- Taxa designated a state fully protected species by CDFW.

- Taxa identified as sensitive, unique or rare, by the USFWS, CDFW, the United States Forest Service (USFS), the United States Bureau of Land Management (BLM), and/or the California Department of Forestry and Fire Protection (CDF).
- Plants that meet the definition of rare or endangered under CEQA §15380(b) and (d). Species that may meet the definition of rare or endangered include the following:
    - Species considered by CNPS and CDFW to be "rare, threatened or endangered in California" (California Rare Plant Rank [CRPR] 1A, 1B and 2) (CNPS 2018). A majority of the CRPR 3 and CRPR 4 plant species generally do not qualify for protection under CESA and NPPA.
    - Species that may warrant consideration on the basis of local significance or recent biological information.
    - Some species included on the CNDDB Special Plants, Bryophytes, and Lichens List (CDFW 2019g).
- Considered a locally significant species, that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA §15125 (c)) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include a species at the outer limits of its known range or a species occurring on an uncommon soil type.

Available literature and databases were reviewed regarding sensitive habitats and special status plant and wildlife species. Special status plant and wildlife species that have the potential to occur within the immediate region of the Study Area were identified. Several agencies, including the USFWS, CDFW, and CNPS publish lists of particular taxa (species and subspecies) and the associated level of protection or concern associated with each. Reviewed and consulted literature and databases focused on the Study Area, and included the following sources listed below:

- The CNDDB, a CDFW species account database that inventories status and locations of rare plants and wildlife in California, was used to identify any sensitive plant communities and special status plants and wildlife that may exist within a two-mile radius of the Project site. A CNDDB search was performed by assessing a two-mile radius around the Study Area (CDFW 2019f). CNDDB records are generally used as a starting point when determining what special status species, if any, may occur in a particular area. However, these records may be old, lack data not yet entered, and do not represent all the special status species that could be in that particular area (Figure 3).
- A map of USFWS critical habitat to determine species with critical habitat mapped in the general vicinity of the Project (Figure 4) (USFWS 2019a).
- Online CNPS Inventory of Rare and Endangered Plants of California (CNPS 2019). A search for the USGS 7.5-Minute Topographic Map Corona South Quadrangle provided information regarding the distribution and habitats of special status vascular plants in the Project Vicinity.
- Pertinent maps, scientific literature, websites, and regional flora and fauna field guides.

The literature review was used as a resource to better understand the biological resources potentially occurring within the Study Area. Although the inventory list of special status plant and wildlife species was not exhaustive of all species that might occur on the property, it provides a wide range of species that are representative of the wildland habitats in the area. Species occurrence and distribution information is based on documented occurrences where surveys have taken place for individual projects; therefore, a lack of documented occurrence does not necessarily indicate that a given species is absent from the Study Area.

4.1.4 Jurisdictional Waters

The following sources were reviewed to determine the potential presence or absence of jurisdictional streams/drainages, wetlands, and their location within the watersheds associated with the Study Area, and other features that might contribute to federal or state jurisdictional authority located within watersheds associated with the Study Area:

- National Wetlands Inventory (NWI) maps (USFWS 2019c). The NWI database indicates potential wetland areas based on changes in vegetation patterns as observed from satellite imagery. This database is used as a preliminary indicator of wetland habitats because the satellite data are not precise.
- Title 33 Code of Federal Register (CFR): Navigation and Navigable Waters Part 328
- USGS National Hydrography Dataset (NHD). Provides the locations of "blue-line" streams as mapped on 7.5-Minute Topographic Map coverage.
- Aerial Imagery (Google Earth©) (Google 2019).
- USGS 7.5-Minute Topographic Maps.
- Natural Resource Conservation Service (NRCS) Soil Survey.

4.1.5 MSHCP Assessment

The Project site is located within the MSHCP, specifically within the Temescal Canyon Area Plan. The MSHCP is a comprehensive plan that includes portions of the County of Riverside and numerous cities. The MSHCP plans for conservation of 146 species and proposes a reserve system of approximately 500,000 acres. The MSHCP is intended to contribute to the economic viability of the County of Riverside by providing landowners, developers, and public infrastructure projects a streamlined regulatory process.

The Riverside Conservation Authority (RCA) MSHCP Information Application website was reviewed to verify any overlays that may occur on the Project site. Regardless of other overlays, MSHCP Section 6.1.2, *Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools*, is applicable to all projects within the MSHCP and describes the process through which protection of riparian/riverine areas, and vernal pools will occur within the MSHCP Area. Protection of these resources is important for a number of MSHCP conservation objectives. An assessment of a Project's potentially significant effects on riparian/riverine areas and vernal pools is required. Guidelines for determining whether or not these resources exist on site are described as follows:

- **Riparian/Riverine Areas** include "lands which contain habitat dominated by trees, shrubs, persistent emergents, or emergent mosses and lichens which occur close to or which depend upon soil moisture from a nearby fresh water source or areas with fresh water flow during all or a portion of the year." Riparian/riverine areas under the MSHCP also include drainage areas that are vegetated or have upland (non-riparian/riverine) vegetation and that drain directly into an area that is described for conservation under the MSHCP (or areas already conserved). The Project site was assessed for areas meeting this definition during the jurisdictional delineation performed on June 27, 2019.

- **Vernal Pools** are described by the MSHCP as "seasonal wetlands that occur in depression areas that have wetlands indicators of all three parameters (soils, vegetation, and hydrology) during the wetter portion of the growing season but normally lack wetlands indicators of hydrology and/or vegetation during the drier portion of the growing season." This definition excludes artificially created wetlands created for proving wetlands habitat or human actions to create open waters or altering natural streams demonstrating characteristic as described above. The Project site was assessed for areas meeting this definition during the jurisdictional delineation performed on June 27, 2019.

4.2 Biological Survey

4.2.1 General Biological Survey

A field survey was performed on June 27, 2019 by SLS biologist Brianna Bernard to assess and map vegetation communities, plants, and wildlife, and to identify habitat areas that could be suitable for special status plant species.

Plant species were identified using plant field and taxonomical guides, such as The Jepson Manual: Vascular Plants of California, second edition (Baldwin et al. 2012). All plant species encountered during the field survey were identified and recorded in field notes. A one-day survey cannot be used to conclusively determine presence or absence of a species; therefore, assessments of presence/absence were made based on the previous surveys, presence of suitable habitat and soils to support the species, known records or occurrence within the area, and known distribution and elevation range obtained from the relevant literature.

During the field survey, the biologist assessed the existing habitat within the Study Area using aerial maps and a Trimble R1 GNSS Receiver paired with the ARC Geographical Information System (ARCGIS) Collector Application. The biologist paid special attention to those habitat areas that had the potential to provide suitable habitat for special status plant and wildlife species. Aerial photographs and maps were used to assist in the delineation of plant community boundaries. Following field mapping, the plant communities were digitized, and the vegetation map was created. General wildlife surveys were conducted on foot and with binoculars within the Study Area.

All wildlife species encountered visually or audibly during the field survey were identified and recorded in field notes. Biologists also recorded signs of wildlife species including animal tracks,

burrows, nests, scat, and remains. Binoculars were used to aid in the identification of observed wildlife. Wildlife field guides and photographs were used to assist with identification of wildlife species during the field survey, as necessary. Photographs were taken to document existing conditions within the Study Area (Appendix B).

4.3 Focused Burrowing Owl Survey

The Project site falls within a MSHCP Burrowing Owl (BUOW) overlay (Figure 4). A Habitat Assessment was conducted on June 27, 2019 to determine any suitable BUOW habitat onsite. Following the assessment, a series of Focused Burrowing Owl surveys were conducted on July 8, July 25, and August 1, 2019 pursuant to MSHCP Section 6.3.2, MSHCP Protocol Survey Instructions, and the methods used to detect and identify BUOW included observation of key signs identified by the *California Burrowing Owl Consortium (CBOC).* This includes observation of key signs such as sight, scat, tracks, burrows, nests, and calls. All encountered burrows or structure entrances were checked for the presence of BUOWs, molted feathers, cast pellets, prey remains, eggshell fragments, tracks, or excrement at or near a burrow entrance. Natural or man-made structures that could support BUOWs were also surveyed when present. The complete results for the Protocol Focused BUOW Report can be found in Appendix A.

Each of the survey efforts were conducted in the morning between 7:15 a.m. and 11:50 a.m. and were not performed during periods of excessive or abnormal heat, wind, rain, or other inclement weather. The Study Area was assessed for the suitability to support burrowing owls and all suitable burrows were inspected for signs of use by burrowing owls. The survey involved walking through suitable habitat within the Study Area (the Project site and a 500-foot buffer). The pedestrian survey transects were spaced approximately 10 to 15 meters apart to allow 100 percent visual coverage of the ground surface.

4.4 Jurisdictional Delineation

An assessment of the Study Area for the presence of jurisdictional features was conducted by SLS biologist Brianna Bernard on June 27, 2019. All depressions and drainages were evaluated for the presence of jurisdictional waters and wetlands according to the Corps and CDFW delineation guidelines, including connectivity or lack of connectivity to Traditional Navigable Waters. Dominant vegetation within and adjacent to the jurisdictional features within the Study Area was identified and recorded.

The Corps and the RWQCB have jurisdiction over Waters of the United States. Jurisdictional non-wetland features for the Waters of the United States are typically determined through the observation of an Ordinary High Water Mark (OHWM), which is defined as the “line on the shore established by the fluctuation of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider

the characteristics of the surrounding areas." Projects with impacts to Waters of the United States are regulated under Sections 401 and 404 of the Clean Water Act.

To determine the presence of a jurisdictional wetland for the Waters of the United States, three indicators are required: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. The methodology published in the *United States Army Corps of Engineers 1987 Wetland Delineation Manual* and the *Arid West Supplement* sets the standards for meeting each of the three indicators, which normally require more than 50 percent cover of dominant plant species typical of a wetland, soils exhibiting characteristics of saturation, and hydrological indicators be present.

CDFW has jurisdiction over water of the Department's interest (California Fish and Game Code §§1600 et seq.; California Code of Regulations, Title 14, §720). Section 1602 of the California Fish and Game Code (FGC) applies to all rivers, streams, lakes and streambeds. CDFW defines a stream as "a body of water that flows perennially or episodically and that is defined by the area in which water currently flows, or has flowed, over a given course during the historic hydrologic course regime, and where the width of its course can reasonably be identified by physical or biological indicators" (Brady and Vyverberg 2013). Likewise, CDFW regulates jurisdictional areas of riparian habitat only to the extent that those areas are part of a stream, river, or lake as defined above. Waters of the State pertaining to Porter-Cologne in relation to RWQCB jurisdiction are defined by California Water Code Section 13050(e) as any surface or ground water within the boundaries of the state.

Prior to the field investigation, SLS biologist reviewed adjacent project biological reports, historical aerial imagery and topography for the Study Area to determine the potential for perennial, intermittent, or ephemeral drainages and associated riparian resources. Generally, indicators of jurisdictional drainages on an aerial photo include vegetation and/or incised lines indicating the path of flowing water. Following the desktop research, SLS biologist conducted an onsite field investigation. Based on the collective results of the desktop investigation and the field surveys, any observed jurisdictional features were mapped using the following parameters:

- The limits of the Corps' jurisdiction extend to the OHWM. OHWM indicators include: the observation of benches, break in bank slope, particle size distribution, sediment deposits, drift, litter, and/or change in plant community.
- The RWQCB shares the Corps' jurisdictional methodology.
- CDFW's jurisdiction applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the state. CDFW's authority also includes riparian habitat (including wetlands) supported by a river, stream, or lake regardless of the presence or absence of hydric soils and saturated soil conditions. Generally, CDFW jurisdiction is mapped to the top of bank of the stream.

5.0 Results

5.1 Vegetation Communities

The vegetation communities and habitat conditions were inspected to confirm presence and habitat quality of the vegetation found onsite. Vegetation communities were mapped based on the Holland Classification System (Holland 1986). Where necessary, deviations were made on best professional judgment when areas did not fit into a specific habitat description provided by Holland. Plant communities were mapped in the field directly onto a 200-scale (1" = 200') aerial photograph and a Trimble R1 GNSS Receiver paired with the ARCGIS Collector Application was utilized during the survey. Biologists confirmed the presence and general quality of the four vegetation communities. Vegetation mapping and acreages for each vegetation community is based on the observations of the field surveys, which are listed below in Table 1 and graphically depicted on Figure 5. Representative photographs of the vegetation communities can be found in Appendix B.

The deviations from Holland include the Disturbed/Developed and the Widened and Restored Wash categories. The deviations for the Developed community was made because of the lack of, or limited habitat values, and includes non-native or invasive species. The deviations for the Widened and Restored Wash community was made because installation of riprap bank protection, grade stabilizers, concrete crossings, and associated ramps deviate from a natural wash classification. This was a result of implementation of the adjacent Arantine Hills Project and impacts were previously accounted for and permits obtained for Arantine Hills implementation. While Bedford Wash currently exhibits limited habitat value, the area is to be seeded with Alluvial Fan Sage Scrub and maintained in perpetuity per the Arantine Hills Long-Term Management Plan.

The field survey included a 500-foot buffer around the Project site to determine what vegetation types exist adjacent to the Project site in order to determine the potential significance of indirect impacts. As shown on Figure 5, the surrounding 500-foot buffer consists primarily of developed/disturbed vegetation community including; Interstate-15, Eagle Glen Road, graded and disturbed land within the Arantine Hills Project. A small portion of the 500-foot buffer area includes the Widened and Restored Bedford Canyon Wash.

Table 1. Vegetation Community Observed within the Project Site[1]

Vegetation Community	Acreage within in the Project Site (acres)
Riversidian Sage Scrub/Chaparral	0.15
Widened and Restored Bedford Canyon Wash[2]	0.20
Ruderal	15.14
Disturbed/Developed	2.28
TOTAL	**17.77**

***Notes**:*
1. Acreages presented in the table represent those found within the Project Boundary. The surrounding 500-foot buffer consists primarily of developed/disturbed vegetation community including; Interstate-15, Eagle Glen Road, graded and disturbed land within the Arantine Hills Project.
2. Included within the Arantine Hills Project, Widened and Restored Wash design. Specifically, the portion of the Widened and Restored Wash within the Project Boundary includes concrete ramps entering and exiting the Wash, buried riprap slope protections, and concrete Wash crossing and grade stablization.

The general description of the habitat observed during the 2019 field survey is described below.

5.1.1 Riversidian Sage Scrub/Chaparral

Approximately 0.15 acres of the Project site is comprised of Riversidian Sage Scrub/Chaparral. This vegetation community is located on the slope of the south bluff of Bedford Canyon Wash. The Riversidean Sage Scrub/Chaparral community is dominated by shrubs such as laurel sumac (*Malosma laurina*), white sage (Salvia apiana), toyon (*Heteromeles arbutifolia*), Mexican elderberry (*Sambucus mexicana*), California sagebrush (*Artemisia californica*), black sage (*Salvia mellifera*), deerweed (*Acmispon glaber*), California buckwheat (*Eriogonum fasciculatum*), chamise (*Adenostoma fasciculatum*), and tree tobacco (*Nicotiana glauca*). The understory of the community consists primarily of non-native species such as red brome (*Bromus madritensis ssp. rubens*), ripgut brome (*Bromus diandrus*), tocalote (*Centaurea melitensis*), and summer mustard (*Hirschfeldia incana*).

5.1.2 Widened and Restored Wash

Approximately 0.20 acres of the Project site is comprised of widened and restored Bedford Canyon Wash (Wash). The original Wash was widened from an approximately 90 feet to 200 feet. Various structures, including buried slope protection, buried grade control structures, and access ramps, are included within the design. The overall restored Wash will be hydroseeded with an alluvial fan sage scrub hydroseed mixture. Specifically, the portion of the Widened and Restored Wash within the Project Boundary includes concrete ramps entering and exiting the Wash, buried riprap slope protections, and the concrete Wash crossing and grade stabilization.

5.1.3 Ruderal

A total of 15.14 acres of the Project site consists of the ruderal community. This vegetation community occurs in the location of the historical citrus operations. It is generally maintained (trimmed) annually due to fire management. Vegetation within this area is comprised of

predominantly of cheeseweed (*Malva parviflora*). Other species include Russian thistle (*Salsola tragus*), summer mustard (*Hirschfeldia incana*), rat-tail fescue (*Festuca microstachys*), foxtail brome (*Bromus madritensis ssp. rubens*), ripgut brome (*Bromus diandrus*), tocalote (*Centaurea melitensis*), Jimson weed (*Datura stramonium*), giant reed (*Arundo donax*), and a few scattered coyote bush (*Baccharis pilularis*), and laurel sumac (*Malosma laurina*).

5.1.4 Developed/Disturbed

A total of 2.28 acres of disturbed area consisting of bare dirt, dirt roads, and sparse vegetation is mapped onsite. The developed/disturbed community contains limited habitat value and includes non-native or invasive species. This community also includes areas of disturbance from both the grading of Arantine Hills and the construction of the Cajalco Interchange.

5.2 Plants

Sensitive plant species include federal or state listed threatened or endangered species, those species listed on the CNPS rare and endangered plant inventory. A single listed plant species occurs within the USGS 7.5' Corona South quadrangle and a brief description of that species is included below. Special status plant species with the potential to occur in the Project site were analyzed based on distribution, habitat requirements, and existing site conditions (Appendix C). All plant species observed within the Project site totaled 22 species during the survey on June 27, 2019 are listed in Appendix D of this report.

Brand's Phacelia (*Phacelia stellaris*)
Status: California Rare Plant Rank 1B.1
Distribution: Orange, Riverside, San Bernardino, and San Diego Counties.
Habitat(s): Habitats supporting coastal scrub and coastal dunes. Known from 1 to 400 meters (3 to 1,300 feet) MSL. Blooms March through June.
Status onsite: None. The site lacks suitable habitat and soils. Not observed during field visit.

Munz's Onion (*Allium munzii*)
Status: state threatened, federally endangered
Distribution: Los Angeles, Riverside, San Bernardino, and San Diego Counties.
Habitat(s): Clay soils supporting chaparral, cismontane woodland, coastal scrub, pinyon-juniper woodland, and valley and foothill grassland. Known from 300 to 1,070 meters (1,000 to 3,500 feet) MSL. Blooms March through May.
Status onsite: None. The site lacks suitable habitat and soils. Not observed during field visit.

San Diego ambrosia (*Ambrosia pumila*)
Status: federally endangered
Distribution: Riverside County and San Diego Counties.
Habitat(s): Found along drainages and areas adjacent to riparian areas. Nearest location is San Luis Rey. Blooms June through September.

Status onsite: Clay or sandy loam soils supporting chaparral, costal scrub valley and foothill grassland and vernal pools. Known from 20 to 415 meters (65 to 1,300 feet) MSL. Blooms April through October. Not observed during field visit.

San Miguel Savory (*Satureja chandleri*)
Status: California Rare Plant Rank 1B.2
Distribution: Los Angeles, Riverside, San Bernardino, and San Diego Counties.
Habitat(s): Rocky, gabbroic, or metavolcanic soils supporting chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland. Known from 120 to 1,075 meters (390 to 3,500 feet) MSL. Blooms March through July.
Status onsite: None. The site lacks suitable habitat and soils. Not observed during field visit.

As determined through the 2019 survey, no special status plant species were observed within the Study Area and there is no opportunity for them to occur due to the disturbed and developed area onsite. Furthermore, the Study Area lacks suitable habitat and soils.

5.3 Critical Habitat

The USFWS's online service for information regarding Threatened and Endangered Species Final Critical Habitat designation within California was reviewed to determine if the Project site is within any species' designated Critical Habitat. The Project site and Buffer Area do not contain a designated Critical Habitat overlay. The closest designated Critical Habitat is located approximately 0.01 mile south for the coastal California gnatcatcher (*Polioptila californica californica* [CAGN]) (Figure 4).

5.4 Wildlife

Special status wildlife species with the potential to occur on the Project site were analyzed based on the species identified in USGS 7.5' Corona South quadrangle and the surrounding eight quadrangles, distribution, habitat requirements, and existing site conditions (Appendix E). No special status wildlife was identified or observed within the Project site during the field visit. However, the following species were listed through the CNDDB as being observed within 2-miles of the Project site: California horned lark (*Eremophila alpestris actia*), coastal California gnatcatcher, coastal whiptail *(Aspidoscelis tigrus stejnegeri*), coast horned lizard (*Phrynosoma blainvillii*), least Bell's vireo (*Vireo bellii pusillus*), orange-throated whiptail (*Aspidoscelis hyperythra*), red-diamond rattlesnake (*Crotalus ruber*), Stephen's Kangaroo Rat (*Dipodomys stephensi*), southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), and western spadefoot (*Spea hammondii*). A brief description of those species and their habitat is included below.

California Horned Lark (*Eremophila alpestris actia*)
Status: CDFW watch list
Habitat(s): A year-long resident within the state and within a variety of open habitats, usually where trees and large shrubs are absent. They are not particular about the nature of the field, so long as it has very little vegetation. Range-wide, they breed in level or gently sloping short grass prairies, montane meadows, "bald" hills, open coastal plains, fallow grain fields, alkali flats, and rangelands. Within southern California, California horned larks breed primarily in open fields, (short) grasslands, and rangelands. Grasses, shrubs, forbs, rocks, litter, clods of soil, and other surface irregularities provide cover.
Status onsite: Moderate potential to occur onsite. Suitable habitat exists onsite due to the maintenance for fire abatement and bare areas, which results in areas with little to no vegetation. Observed during the field survey within the surrounding 500-feet buffer, however, was not observed onsite.

Coastal California gnatcatcher (*Polioptila californica californica*)
Status: federally threatened, CDFW species of special concern
Distribution: Southern Los Angeles, Orange, western Riverside, and San Diego counties south into Baja.
Habitat(s): Coastal sage scrub of varying subtypes, sometimes riparian, chaparral, and other habitats as well.
Status onsite: None. The site lacks suitable habitat. Not observed during field visit.

Coastal whiptail (*Aspidoscelis tigrus stejnegeri*)
Status: CDFW species of special concern
Habitat(s): This species is found in a variety of habitats, primarily hot and dry open areas with sparse vegetation including chaparral, woodland, and riparian areas. This subspecies is found in coastal southern California, north into Ventura County, and south into Baja California. Additional important habitat characteristics include Important habitat components include shrub cover with accumulated leaf litter, and an abundance of invertebrate prey, particularly termites.
Status onsite: None. The site lacks suitable habitat. Not observed during field visit.

Coast horned lizard (*Phrynosoma blainvillii*)
Status: CDFW species of special concern
Habitat(s): Occurs in a variety of vegetation types including coastal sage scrub, chaparral, annual grassland, oak woodland and riparian woodlands.
Status onsite: None. The site lacks suitable habitat. Not observed during field visit.

Least Bell's Vireo (*Vireo bellii pusillus*)
Status: federally endangered, state endangered
Habitat(s): This species primarily occupies riverine riparian habitats that typically feature dense cover within 1-2 m of the ground and a dense, stratified canopy. Typically, it is associated with southern willow scrub, cottonwood-willow forest, mule fat scrub, sycamore alluvial woodland, coast live oak riparian forest, arroyo willow riparian forest, or mesquite in desert localities. It uses habitat which is limited to the immediate vicinity of water courses.

Status onsite: None. The site lacks suitable habitat. Not observed during field visit.

Orange-Throated Whiptail (*Aspidoscelis hyperythra*)
Status: CDFW species of special concern
Habitat(s): The species is generally found in semi-arid brushy areas typically with loose soil and rocks, including washes, stream sides, rocky hillsides, and coastal chaparral. Habitat types include low elevational chaparral, non-native grassland, (Riversidian) coastal sage scrub, juniper woodland and oak woodland. Associations include alluvial fan scrub and riparian areas. Friable soil appears to be a necessary requirement for excavating burrows and hiding eggs.
Status onsite: None. The site lacks suitable habitat. Not observed during field visit.

Red-Diamond Rattlesnake (*Crotalus ruber*)
Status: species of special concern
Habitat(s): It can be found from the desert, through dense chaparral in the foothills (it avoids the mountains above around 4,000 feet), to warm inland mesas and valleys, all the way to the cool ocean shore. It is most commonly associated with heavy brush with large rocks or boulders. Dense chaparral in the foothills, cactus or boulder associated coastal sage scrub, oak and pine woodlands, and desert slope scrub associations are known to carry populations of the northern red-diamond rattlesnake, however, chamise and red shank associations may offer better structural habitat for refuges and food resources for this species than other habitats. They need rodent burrows, cracks in rocks or surface cover objects.
Status onsite: Limited habitat is found onsite due to the bare and disturbed areas with heavy brush found onsite, and maintenance for fire abatement. Not observed during field visit.

Stephen's Kangaroo Rat (*Dipodomys stephensi*)
Status: federally endangered, state threatened
Habitat(s): This species prefers large areas of disturbed or patchy annual and perennial grasslands and open coastal sage scrub. Preferred perennials plant species include buckwheat and chamise and preferred annual plant species include brome grass. The nearest known populations are in Rancho Guejito and at the Naval Weapons Station in Fallbrook.
Status onsite: None. The site lacks suitable habitat. Not observed during field visit.

Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)
Status: CDFW watch list
Habitat(s): They are found on grass-covered hillsides, coastal sage scrub, and chaparral and often occur near the edges of the denser scrub and chaparral associations. Preference is shown for tracts of California sagebrush. Optimal habitat consists of sparse, low brush or grass, hilly slopes preferably interspersed with boulders and outcrops. The species may occur on steep grassy slopes without shrubs if rock outcrops are present. It is a very secretive species.
Status onsite: None. The site lacks suitable habitat. Not observed during field visit.

Western Spadefoot (*Spea hammondii*)
Status: CDFW species of special concern
Habitat(s): May be found in coastal sage scrub, open chaparral, pine-oak woodlands and grassland habitats, but is most common in grasslands with vernal pools or mixed grassland/coastal sage scrub areas. Within these habitats, they require rain pools/vernal pools in which to reproduce and that persist with more than three weeks of standing water in which to metamorphose successfully. They can also breed in slow-moving streams (e.g., areas flooded by intermittent streams). Water breeding sites must lack fish, bullfrogs, and crayfish in order for to successfully reproduce and metamorphose.
Status onsite: None. The site lacks suitable habitat. Not observed during field visit.

Summary of Sensitive Species
No special status species or evidence of their presence were observed or heard during the 2019 survey. Given the site's annual maintenance for fire abatement, existing surrounding uses (Arantine Hills Construction and I-15/Cajalco construction), and lack of habitat there is no opportunity for them to occur within the Study Area.

5.4.1 Wildlife Species Observed or Detected

The animal species or signs thereof observed during the SLS survey are listed below:

Birds:

- American crow (*Corvus brachyrhynchos*)
- Anna's hummingbird (*Calypte anna*)
- black phoebe (*Sayornis nigricans*)
- California quail (*Callipepla californica*)
- California towhee (*Melozone crissalis*)
- house finch (*Haemorhous mexicanus*)
- mourning dove (*Zenaida macroura*)
- red-tailed hawk (*Buteo jamaicensis*)
- song sparrow (*Melospiza melodia*)
- turkey vulture (*Cathartes aura*)
- California Horned Lark (*Eremophila alpestris actia*)
- western scrub jay (*Aphelocoma californica*)

Mammals:

- California ground squirrel (*Spermophilus beecheyi*)
- desert cottontail (*Sylvilagus audubonii*)

Reptiles:

- western fence lizard (*Sceloporus occidentalis*)

5.5 Focused Burrowing Owl Survey

Per the MSHCP BUOW Survey Instructions, a Habitat Assessment was conducted on June 27, 2019 to determine if any suitable BUOW habitat occurred onsite. Following the habitat assessment, three additional focused surveys took place on July 8, 25, and August 1, 2019 between 7:15 a.m. and 11:50 a.m. Temperatures during the survey ranged between 64° F and 95° F, with generally predominant sunny, clear skies and 0-2 mph winds. The surveys were conducted during typical BUOW peak activity time and was not conducted during rain, high winds (> 20 miles per hour), dense cloud cover >75%. Prior to the commencement of the survey, SLS biologist scanned the Study Area, consisting of the Project site and the surrounding 500-foot buffer, using binoculars to look for burrowing owl. The Study Area was assessed for the suitability to support burrowing owls and all suitable burrows were inspected for signs of use by burrowing owls. The surveys involved walking through suitable habitat within the Study Area. Pedestrian survey transects were spaced approximately 10 to 15 meters apart to allow 100 percent visual coverage of the ground surface.

No BUOWs or evidence of BUOWs were observed on site within the Study Area during the focused survey. A majority of the Project site was characterized by actively maintained ruderal fields, lacking necessary sized burrows to provide suitable nesting habitat for BUOW. Much of the buffer area is developed, with Arantine Hills to the west and I-15 to the east. California ground squirrels and their burrows were observed within the Study Area. These burrows were actively utilized by the California ground squirrels and contained no BUOW or keys signs (sight, whitewash, burrows, bones, feathers, pellets, nests, and calls). Furthermore, the Project site is maintained for fire abatement and the property adjacent to the Project site has active construction and grading activities including the I-15/Cajalco Interchange. Please refer to Appendix A for the complete results for the focused survey.

5.6 Regional Connectivity/Wildlife Movement

Wildlife corridors link together areas of suitable habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The fragmentation of open space areas by urbanization creates isolated “islands” of wildlife habitat. In the absence of habitat linkages that allow movement to adjoining open space areas, various studies have concluded that some wildlife species, especially the larger and more mobile mammals, would not likely persist over time in fragmented or isolated habitat areas because they prohibit the infusion of new individuals and genetic information (MacArthur and Wilson 1967, Soule 1987, Harris and Gallager 1989). Corridors effectively act as links between different populations of a species. A group of smaller populations (termed “demes”) linked together via a system of corridors is termed a “meta-population.” The long-term health of each deme within the meta-population is dependent upon its size and the frequency of interchange of individuals (immigration versus emigration). The smaller the deme, the more important immigration becomes, because prolonged inbreeding with the same individuals can reduce genetic variability. Immigrant individuals that move into the deme from adjoining demes mate with individuals and supply that deme with new genes and

gene combinations that increases overall genetic diversity. An increase in a population's genetic variability is generally associated with an increase in a population's health.

Corridors mitigate the effects of habitat fragmentation by:

- Allowing animals to move between remaining habitats, which allows depleted populations to be replenished and promotes genetic diversity.
- Providing escape routes from fire, predators, and human disturbances, thus reducing the risk that catastrophic events (such as fires or disease) will result in population or local species extinction.
- Serving as travel routes for individual animals as they move within their home ranges in search of food, water, mates, and other needs (Fahrig and Merriam 1985, Simberloff and Cox 1987, Harris and Gallagher 1989).

Wildlife movement activities usually fall into one of three movement categories:

- Dispersal (e.g., juvenile animals from natal areas, individuals extending range distributions).
- Seasonal migration.
- Movements related to home range activities (foraging for food or water, defending territories, searching for mates, breeding areas, or cover).

A number of terms have been used in various wildlife movement studies, such as "wildlife corridor," "travel route," "habitat linkage," and "wildlife crossing" to refer to areas in which wildlife moves from one area to another. To clarify the meaning of these terms and facilitate the discussion on wildlife movement in this study, these terms are defined as follows:

- Travel route: a landscape feature (such as a ridge line, drainage, canyon, or riparian strip) within a larger natural habitat area that is used frequently by animals to facilitate movement and provide access to necessary resources (e.g., water, food, cover, den sites). The travel route is generally preferred because it provides the least amount of topographic resistance in moving from one area to another; it contains adequate food, water, and/or cover while moving between habitat areas; and provides a relatively direct link between target habitat areas.

- Wildlife corridor: a piece of habitat, usually linear in nature, that connects two or more habitat patches that would otherwise be fragmented or isolated from one another. Wildlife corridors are usually bounded by urban land areas or other areas unsuitable for wildlife. The corridor generally contains suitable cover, food, and/or water to support species and facilitate movement while in the corridor. Larger, landscape-level corridors (often referred to as "habitat or landscape linkages") can provide both transitory and resident habitat for a variety of species.

- Wildlife crossing: a small, narrow area, relatively short in length and generally constricted in nature, that allows wildlife to pass under or through an obstacle or barrier that otherwise hinders or prevents movement. Crossings are typically manmade and include culverts, underpasses, drainage pipes, and tunnels to provide access across or under roads, highways, pipelines, or other physical obstacles. These are often "choke points" along a movement corridor.

5.6.1 Wildlife Movement within the Study Area

The Study Area may serve a function in local wildlife movement; however, the Study Area was not identified in the MSHCP as a Core Linkage, indicating a lack of importance for regional wildlife movement. Bedford Canyon Wash may provide a linkage for wildlife between the Cleveland National Forest and Lake Matthews. A recent restoration project proposed by the Riverside-Corona Resource Conservation District (RCRCD) for a downstream parcel within the Bedford Canyon Wash would, "Preserve the channel/floodplain location which historically functioned as part of a regionally significant east- west wildlife corridor," suggesting that this corridor provides a valuable linkage. Bedford Canyon Wash will not be impacted as part of the proposed project and continue to provide the opportunity for wildlife movement.

5.7 Jurisdictional Areas

5.7.1 Waters of the United States

This section relies on the term "Waters of the United States" as it applies to the jurisdictional limits under the authority of the Army Corps of Engineers under the Clean Water Act and applies to the jurisdiction of the Regional Water Quality Control Board under the Porter-Cologne Water Quality Act. Based on the methodology described in Section 4.4, both literature/data base review and a field delineation were conducted to determine the presence of Waters of the United States.

The only jurisdictional feature located on the Project Site is Bedford Canyon Wash, which is presented in Table 2 and shown on Figure 6.

As part of the implementation of the Arantine Hill Specific Plan, Bedford Canyon Wash has been widened and restored, including the placement of rip-rap bank protection, grade control structures, concrete crossings, and access ramps. Specifically, the portion of Bedford Wash within the Project Boundary includes concrete ramps entering and exiting the Wash, buried riprap slope protection, and a concrete Wash crossing that includes grade stabilization. Jurisdictional Waters of the U.S. extend from invert to invert.

Table 2. Jurisdictional Waters of the United States within the Project site

Drainage	Total Acreage
Bedford Canyon Wash	0.10[1]
[1]. Consists of non-wetland jurisdictional features.	

5.7.2 Waters of the State

The Project site includes Waters of the State that meet CDFW characteristics in accordance with FGC Section 1600 (Brady and Vyverberg 2013). The only Waters of the State jurisdictional feature located on the Project Site is Bedford Canyon Wash due to the presence of biological and physical characteristics of a stream subject to the Jurisdiction of CDFW under FGC §1600 et seq. The Wash exhibits biological and physical indicators of Waters of the State through the presence of channel bed and bank. The total inventory of Waters of the State is presented in Table 3 and shown on Figure 6.

As part of the implementation of the Arantine Hill Specific Plan, Bedford Canyon Wash has been widened and restored. Specifically, the portion of the Widened and Restored Wash within the Project Boundary includes concrete ramps entering and exiting the Wash, buried riprap slope protection, and the concrete Wash crossing. Jurisdictional Waters of the State extend from top of bank to top of bank.

Table 3. Jurisdictional Waters of the State within the Project Site

Drainage	Total Acreage
Bedford Canyon Wash	0.20[1]
[1]. Widened and Restored Wash.	

5.7.3 MSHCP Riparian/Riverine and Vernal Pool Assessment

Volume I, Section 6.1.2 of the MSHCP describes the process through which protection of riparian/riverine areas and vernal pools would occur within the MSHCP Plan Area. The purpose is to ensure that the biological functions and values of these areas throughout the MSHCP Plan Area are maintained such that habitat values for species inside the MSHCP Conservation Area are maintained. The MSHCP requires that as projects are proposed within the overall Plan Area, the effect of those projects on riparian/riverine areas and vernal pools must be addressed.

The MSHCP defines riparian/riverine areas as:

> *…lands which contain Habitat dominated by trees, shrubs, persistent emergent mosses and lichens, which occur close to or which depend upon soils moisture from a nearby fresh water source; or areas with fresh water flow during all or a portion of the year.*

The MSHCP defines vernal pools as:

> *…seasonal wetlands that occur in depression areas that have wetlands indicators of all three parameters (soils, vegetation, and hydrology) during the wetter portion of the growing season but normally lack wetland indictors of hydrology and/or vegetation during the drier portion of the growing season.*

With the exception of wetlands created for the purpose of providing wetlands habitat or resulting from human actions to create open waters or from the alteration of natural stream courses, areas demonstrating characteristics as described above which are artificially created are not included in these definitions.

The total inventory of MSHCP Riparian and Riverine is presented in Table 4 and shown on Figure 7. The Project site contains no vernal pools or depressions as defined under MSHCP vernal pool features.

As part of the implementation of the Arantine Hill Specific Plan, the acreage identified as Riparian/Riverine Habitat includes the widened and restored Bedford Wash. Specifically, the portion of the Widened and Restored Wash within the Project Boundary includes concrete ramps entering and exiting the Wash, buried riprap slope protection and a concrete Wash crossing that includes grade stabilization.

Table 4. Riparian/Riverine Habitat

Community Type	Acreage Onsite
Riparian/Riverine	0.20[1]
1. Widened and Restored Wash.	

5.8 MSHCP Assessment

The Project is located within the Temescal Canyon Area Plan of the MSHCP. The Project site is not located within any MSHCP Criteria Areas, Cell Groups, or Subunits. Furthermore, the Project site is not located in survey areas for Amphibians, Mammals, or Special Linkage areas. The Project site is located within the Narrow Endemic Plants Overlay (Survey Area Number 7) pursuant to MSHCP Section 6.1.3 and Western Burrowing Owl overlay pursuant to MSHCP Section 6.3.2. The Project site was surveyed and assessed for the following:

- Riparian and Riverine Areas (Section 6.1.2)
- Narrow Endemic Plants - Survey Area Number 7 (Section 6.1.3)
- Western Burrowing Owl Survey Area (Section 6.3.2)

Thus, a separate Consistency Assessment has been prepared pursuant to those sections.

5.9 Soils Mapping

The United States Department of Agriculture Natural Resources Conservation Service lists four soil types (series) for the Project Site (Figure 8). The following soil types are located on the Project site and described below.

AkC: Arbuckle loam, 2 to 8 percent slopes
Soils of the Arbuckle series consist of well-drained soils and have slopes of 2 to 25 percent. These soils occur on alluvial fans and developed in alluvium from metasedimentary rocks. Arbuckle soils are not designated as a sensitive soil type by the MSHCP.

AIC: Arbuckle gravelly loam, 2 to 8 percent slopes
Soils of the Arbuckle series consist of well-drained soils and have slopes of 2 to 25 percent. These soils occur on alluvial fans and developed in alluvium from metasedimentary rocks. Arbuckle soils are not designated as a sensitive soil type by the MSHCP.

AID: Arbuckle gravelly loam, 8 to 15 percent slopes
Soils of the Arbuckle series consist of well-drained soils and have slopes of 2 to 25 percent. These soils occur on alluvial fans and developed in alluvium from metasedimentary rocks. Arbuckle soils are not designated as a sensitive soil type by the MSHCP.

CmC: Cortina cobbly loamy sand, 2 to 8 percent slopes
The Cortina series consists of somewhat excessively drained and excessively drained soils on alluvial fans and in valley fills. These soils formed in alluvium from metasedimentary rocks. Cortina soils are not designated as a sensitive soil type by the MSHCP.

GdC: Garretson gravelly very fine sandy loam, 2 to 8 percent slope
The Garretson series consists of well-drained soils on alluvial fans. These soils formed in alluvium made up chiefly of metasedimentary materials. Garretson soils are not designated as a sensitive soil type by the MSHCP. Garretson soils are mapped within the several areas within the Project Study Area.

SuF2: Soper cobbly loam, 25 to 50 percent slopes, eroded
The Soper series consists of moderately deep well drained soils that formed in material weathered from conglomerate and sandstone. Soper soils are on hills and uplands and have slopes of 15 to 50 percent. The mean annual precipitation is about 18 inches and the mean annual air temperature is about 60 degrees Fahrenheit. These soils are mapped in the southern most portion of the Project Boundary.

TeG: Terrace Escarpments
Terrace escarpments consist of variable alluvium on terraces and barrancas. Small areas of recently deposited alluvium may be near the bottom of the escarpments. This land is unaltered alluvial outwash derived from granite, gabbro, metamorphosed sandstone, sandstone, or mica schist. Terrace escarpments are not designated as a sensitive soil type by the MSHCP.

6.0 Project Impacts

This section discusses potential impacts to biological resources that could result from Project implementation. Biological resources may be either directly or indirectly impacted by a Project. Direct and indirect impacts may be either permanent or temporary in nature. These impact categories are defined below.

- Direct impact: any loss, alteration, disturbance or destruction of biological resources that would result from project-related activities is a direct impact. Examples include vegetation clearing, encroaching into wetlands, diverting natural surface water flows, and the loss of individual species and/or their habitats. Direct permanent impacts resulting from Project implementation consist of any ground-disturbing activities (i.e., vegetation removal, grading, paving, building of structures, installing landscaping, creating the fuel modification zone, etc.).

- Indirect impact: as a result of Project-related activities, biological resources may also be affected in a manner that is not direct. Examples of indirect impacts include elevated noise, light, and dust levels, increased human activity, decreased water quality, erosion created by the removal of vegetation, and the introduction of invasive plants and unnatural predators (e.g. domestic cats and dogs). These indirect impacts may be both short term and long term in their extent.

- Permanent impacts: all impacts that result in the long-term or irreversible removal of biological resources are considered permanent. Examples include constructing a building or permanent road on an area containing biological resources.

- Temporary impacts: any impacts considered to have reversible effects on biological resources can be viewed as temporary. Examples include the generation of fugitive dust during grading or removing vegetation and either allowing the natural vegetation to recolonize or actively revegetating the impact area.

Under each section, potential impacts are discussed.

6.1 Impacts to Vegetation Communities/Habitats

Impacts are provided for both alternative methods regarding importing dirt to the site. Calculations were based on the currently proposed development design in combination with the vegetation map from the field survey and aerial imagery.

Indirect temporary impacts to plant communities include the effects of fugitive dust created by grading activities, vehicle construction traffic, or offsite discharge of surface water runoff with its associated erosion and sedimentation. Grading-related dust could settle on plant surfaces and indirectly inhibit metabolic processes such as photosynthesis and respiration. Grading-related

erosion, runoff, sedimentation, soil compaction, and alteration of drainage patterns may affect plants by altering site conditions so that the location in which they are growing becomes unfavorable. Another example of indirect impacts includes the introduction and spread of invasive, exotic plants which could result in permanent indirect impacts to adjacent native plant communities.

6.1.1 Total Project Impacts with Alternative 1: Off-site Dirt Import

Figure 9 and Table 5 describe and list the approximate total acreages of vegetation communities that will be permanently and temporary impacted by Project activities should Alternative 1 be implemented.

Table 5. Alternative 1: Off-site Dirt Import – On-Site Vegetation Community Impacts[1]

Vegetation Community	Existing Vegetation onsite (acres)	Total Permanent Impacts (acres)	Total Temporary Impacts (acres)	Avoided (acres)
Riversidian Sage Scrub/Chaparral	0.15	0.00	0.00	0.15
Widened and Restored Bedford Canyon Wash[2]	0.20	0.01	0.00	0.19
Ruderal	15.14	14.32	0.00	0.82
Disturbed/Developed	2.28	2.00	0.00	0.28
TOTAL	**17.77**	**16.33**	**0.00**	**1.44**

Notes:

1. Acreages presented in the table represent those found within the Project Boundary. The surrounding 500-foot buffer consists primarily of developed/disturbed vegetation community including; Interstate-15, Eagle Glen Road, graded and disturbed land within the Arantine Hills Project.

2. Included within the Arantine Hills Project, Widened and Restored Wash design. Specifically, the portions of the Widened and Restored Wash within the Project Boundary includes concrete ramps entering and exiting the Wash, buried riprap slope protection, and concrete Wash crossing.

Direct impacts to 16.33 acres on the Project site are not considered significant because the habitats are common in the Project Vicinity and have minimal habitat value. Furthermore, these impacts do not represent CNDDB, State, or MSHCP sensitive plant communities. In addition, many of these areas within the Study Area exhibit a moderate or high level of disturbance.

Of the total 16.33 acres impacted onsite, the 0.01 acre of impacts to Bedford Canyon Wash would occur within an area that was previously disturbed through authorization of Regulatory Permits for the widening and restoration of Bedford Canyon Wash and does not contain native vegetation. Therefore, no new impacts to jurisdictional waters would occur and no additional Regulatory Permits are required.

No direct impacts are expected to occur within the surrounding buffer area. Indirect impacts to the surrounding 500-foot buffer area could occur from construction activities, however impacts would be less than significant because no sensitive habitat or sensitive species are located within the Buffer Area, the habitats are common in the Project Vicinity; the area consists of

disturbed/developed vegetation communities; and construction BMP's such as compliance with air quality regulations would require frequent watering during construction activities to minimize dust.

6.1.2 Total Project Impacts with Alternative 2: PA 14 Dirt Import

Figure 10 and Table 6 describe and list the approximate total acreages of vegetation communities that will be permanently and temporary impacted by Project activities should Alternative 2 for importing dirt be implemented.

Table 6. Alternative 2: PA 14 Dirt Import – On-Site Vegetation Community Impacts[1]

Vegetation Community	Existing Vegetation onsite (acres)	Total Permanent Impacts (acres)	Total Temporary Impacts[3] (acres)	Avoided (acres)
Riversidian Sage Scrub/Chaparral	0.15	0.00	0.10	0.05
Widened and Restored Bedford Canyon Wash[2]	0.20	0.01	0.09[4]	0.10
Ruderal	15.14	14.86	0.00	0.28
Disturbed/Developed	2.28	2.05	0.00	0.23
TOTAL	**17.77**	**16.92**	**0.19[3]**	**0.66**

Notes:

1. Acreages presented in the table represent those found within the Project Boundary. The surrounding 500-foot buffer consists primarily of developed/disturbed vegetation community including; Interstate-15, Eagle Glen Road, graded and disturbed land within the Arantine Hills Project.

2. Included within the Arantine Hills Project, Widened and Restored Wash design. Specifically, the portions of the Widened and Restored Wash within the Project Boundary includes concrete ramps entering and exiting the Wash, buried riprap slope protection, and concrete Wash crossing.

3. Temporary impacts are due to the access ramp from PA 14 to the commercial site, which is to be constructed during grading operations. Following the completion of the grading operations the temporary dirt ramp would be removed and the bluff will be reconstructed and replanted with coastal sage scrub mix.

4. The 0.09 acres of temporary impacts to the Widened and Restored Bedford Canyon Wash occur completely within the limits of the existing concrete pad crossing and do not impact native or seeded habitat.

Of the total 16.92 acres impacted onsite, direct impacts to 16.91 acres are not considered significant because the habitats are common in the Project Vicinity and have minimal habitat value. Furthermore, these impacts do not represent CNDDB, State, or MSHCP sensitive plant communities. In addition, many of these areas within the Study Area exhibit a moderate or high level of disturbance.

Temporary impacts would occur to 0.19 acres. These impacts are due to the construction of an access ramp leading down to the existing concrete crossing of Bedford Canyon Wash. Grading the access ramp would require creating a notch in the existing bluff with side slopes. Fill, ranging from 5 feet to 10 feet, would be temporarily placed on top of the existing concrete pad crossing Bedford Canyon Wash to both protect the concrete pad and function as a ramp to gain elevation.

Careful grading operations and BMPs would avoid dirt spoils in Bedford Canyon Wash. Import operation would need to take place during the dry season, however, temporary pipe culverts

would be placed on top of the concrete pad under the dirt ramp in case unexpected monsoonal storms caused Bedford Canyon Wash to flow.

Following completion of the grading operations, the temporary dirt bridge and culverts would be removed from the concrete pad crossing Bedford Canyon Wash and the notch in the bluff for the access ramp would be reconstructed at 2:1 slopes and surface terrace drains would be added to control storm runoff to minimize erosion. The graded slopes would be replanted with a native coastal sage scrub mix.

Of the total 16.92 acres impacted onsite, the 0.01 acre of impacts to Bedford Canyon Wash would occur within an area that was previously disturbed through authorization of Regulatory Permits for the widening and restoration of Bedford Canyon Wash. Therefore, no new impacts to jurisdictional waters would occur and no additional Regulatory Permits are required.

No direct impacts are expected to occur within the surrounding buffer area. Indirect impacts to the surrounding 500-foot buffer area could occur from construction activities, however impacts would be less than significant because no sensitive habitat or sensitive species are located within the Buffer Area, the habitats are common in the Project Vicinity; the area consists of disturbed/developed vegetation communities; and construction BMP's such as compliance with air quality regulations would require frequent watering during construction activities to minimize dust.

6.2 Potential Impacts to Special Status Plants

As concluded in Section 5.2 above, no special status plant species were observed during the 2019 surveys and none are expected to occur onsite due to the lack of suitable habitat found on the Project site; therefore, for either dirt import alternative there are no potential impacts to special status plants due to Project implementation.

6.3 Potential Impacts to Critical Habitat

As concluded in Section 5.3 above, the Project site does not contain a designated Critical Habitat overlay. The closest designated Critical Habitat is located approximately 0.01 mile south for the CAGN. No designated Critical Habitat is located onsite; therefore, for either dirt import alternative there are no potential impacts to designated Critical Habitat due to Project implementation.

6.4 Potential Impacts to Special Status Wildlife

As shown in Table 7 below, some impacts to avian species protected by the MBTA may occur as a result of Project construction for both dirt import alternatives. If Project construction is scheduled to occur during the typical breeding bird season (January 1 through August 15 for raptors and February 15 through September 15 for all other avian species), short-term noise

effects to birds that may forage or nest onsite may occur. A pre-construction nesting bird survey is required within five (5) days of ground disturbances during typical nesting bird season to delineate any active nests found within the Project site and 300-foot buffer. Should an active nest be observed onsite, a no-work buffer shall occur surrounding the active nest, until determined by the Project Biologist it has become inactive. The implementation of the pre-construction nesting bird survey shall prevent any impacts due to construction-related noise levels on species covered under the MBTA.

Of the total ten special status wildlife identified below, the Project site lacks suitable habitat for eight of the species, therefore, no impacts are expected to occur to the eight special status wildlife species as a result of Project implementation and either dirt import alternatives. It was determined the Project site contains habitat for the California Horned Lark and limited habitat for the red-diamond rattlesnake. Pre-construction nesting bird surveys as outlined above shall occur to prevent any construction-related impacts during the typical nesting bird season. Furthermore, Biological Monitoring during initial ground disturbances shall occur to identify and locate any red-diamond rattlesnake within the Project site. Should any red-diamond rattlesnake species be located within the Project site, construction and earthwork within the area shall cease to allow for the species to vacate or be relocated from the area safely to prevent any impacts by construction-related earthwork on the species.

Table 7. Impact Analysis Summary for Special Status Species

Species	Extent of Impact	Significance of Impact
California Horned Lark MSHCP: Covered Species	Suitable habitat is found within the Project site as a result of the bare spots and developed area as identified within Section 5.4.	Less than significant impact with pre-construction surveys. No species were observed on site during surveys and this species does not occupy sensitive habitat. Pre-construction surveys would ensure no direct impacts during vegetation removal.
Coastal California gnatcatcher MSHCP: Covered Species	Suitable habitat is not found on the Project site as identified within Section 5.4.	No Impact due to lack of suitable habitat onsite. Not observed during field visit.
Coastal whiptail MSHCP: Covered Species	Suitable habitat is not found on the Project site as identified within Section 5.4.	No Impact due to lack of suitable habitat onsite. Not observed during field visit.

Species	Extent of Impact	Significance of Impact
Coastal Horned Lizard MSHCP: Covered Species	Suitable habitat is not found on the Project site as identified within Section 5.4.	No Impact due to lack of suitable habitat onsite. Not observed during field visit.
Least Bell's Vireo MSHCP: Covered Species	No suitable habitat is found within the Project site as identified within Section 5.4.	No Impact due to lack of suitable habitat onsite. Not observed during field visit.
Orange-throated Whiptail MSHCP: Covered Species	No suitable habitat is found within the Project site as identified within Section 5.4.	No Impact due to lack of suitable habitat onsite. Not observed during field visit.
Red-Diamond Rattlesnake MSHCP: Covered Species	Limited habitat is found onsite due to the bare and disturbed areas with heavy brush found onsite as identified within Section 5.4.	Less than significant impact with Biological Monitoring during initial ground disturbances. No species were observed onsite during surveys. Biological Monitoring during initial ground disturbances would ensure no direct impacts during ground disturbances.
Stephen's Kangaroo Rat MSHCP: Covered Species	No suitable habitat is found within the Project site as identified within Section 5.4.	No Impact due to lack of suitable habitat onsite. Not observed during field visit.
Southern California Rufous-Crowned Sparrow MSHCP: Covered Species	No suitable habitat is found within the Project site as identified within Section 5.4.	No Impact due to lack of suitable habitat onsite. Not observed during field visit.
Western Spadefoot MSHCP: Covered Species	No suitable habitat is found within the Project site as identified within Section 5.4.	No Impact due to lack of suitable habitat onsite. Not observed during field visit.

Project construction could also result in additional short-term impacts including night lighting, littering, and illegal wildlife collections. However, Project compliance with the following BMPs consistent with State and federal laws would reduce the potential for such indirect impacts to below significance:

- All temporary construction-related night lighting used in onsite development areas will be shielded and/or directed downward to avoid indirect impacts to nocturnal wildlife such that night lighting could increase predation rates.

- All construction contractors, subcontractors, and employees will comply with the litter and pollution laws and will institute a litter control/removal program during the course of construction activities to reduce the attractiveness of the area to opportunistic predators such as coyotes, opossums, and common ravens.

- Active nests (nests with chicks or eggs) cannot be removed or disturbed. Nests may be removed or disturbed by a qualified biologist, if not active.

- Construction employees, contractors, and site visitors will be prohibited from collecting wildlife.

With implementation of the night lighting reduction PDFs via their inclusion in the Project's MMRP, potential indirect long-term impacts to wildlife would be reduced to below significance.

6.5 Potential Impacts to Wildlife Movement

As described earlier, Bedford Canyon Wash may serve a function in local wildlife movement. Bedford Canyon Wash provides connectivity between the Santa Ana Mountains and Lake Matthews. Therefore, Bedford Canyon Wash does provide a connection between large areas of undeveloped land, which may be utilized for wildlife movement. Furthermore, with the widened and restored Bedford Canyon Wash on the Arantine Hills project located upstream, Bedford Canyon Wash corridor will continue to provide a valuable linkage for wildlife. Project implementation will not impact the ability of Bedford Canyon Wash to continue to serve as a movement corridor.

Therefore, no impacts to wildlife movement are anticipated as a result of implementation of the Project and either dirt import alternative.

6.6 Potential Impacts to Jurisdictional Features

Implementation of the Arantine Hills Specific Plan includes the widening, protection, and restoration of Bedford Canyon Wash. To permit those activities, the following Regulatory Permits and MSHCP Consistency Determination were issued:

- U.S. Army Corps of Engineers (Corps File No. SPL-2015-00361-ERS)
- California Department of Fish and Wildlife (Notification No. 1600-2015-0055-R6):
- Regional Water Quality Control Board (SARWQCB Project NO. 332014-24)
- U.S. Fish and Wildlife Service (FWS-WRIV-15B0271-16F0852)

- MSHCP Consistency Determination and Determination of Biologically Equivalent or Superior Preservation (DBESP) (FWS/CDFW-15BO0271-15CPA0281)

The Regulatory Permits and MSHCP Consistency authorized the widening and restoration of Bedford Wash, including certain improvements for flood protection. Buried rip-rap extending down to scour depth was permitted along both sides of the Wash. Grade stabilizing structures were permitted perpendicular to flows. Several stormdrain outlet structures surrounded by a concrete structure were incorporated into the rip-rap lined banks to outlet storm flows from the development area into Bedford Wash. Additionally, two concrete crossings were permitted, at the far upstream and downstream limits within the Arantine Hills Specific Plan. The concrete crossings allow maintenance vehicles to cross the Wash and access the bluff side. Additionally, a future bridge crossing Bedford Wash is authorized by the Regulatory Permits. The Regulatory Permits remain active and Project activities authorized under the permits remain on-going.

The proposed Project has two components that could affect the jurisdictional areas of Bedford Canyon Wash. One component of the Project is a storm drain pipe from the on-site detention basin that must outlet into Bedford Wash. The Project proposes to outlet the storm drain pipe with the same design as other outlets into Bedford Wash, with the pipe outletting through a concrete structure constructed into the rip-rap lined bank of Bedford Wash, which results in approximately 0.01 acre of modification to the rip-rap lined bank of Bedford Wash (Figure 11). For the proposed Project, the outlet structure will be constructed on the downstream concrete crossing, eliminating any impacts to the soft bottom portion of the Wash. Since the outlet structure is located outside of the invert of Bedford Canyon Wash, construction of the outlet structure would occur beyond the jurisdictional limits of Waters of the United States. Furthermore, since the proposed outlet structure is located in an area of Bedford Wash that was previously disturbed through authorization of Regulatory Permits and MSHCP Consistency Determination for the widening and restoration of Bedford Canyon Wash, and those permits remain active, no new impacts to Waters of the State or MSHCP Features would occur and no additional Regulatory Permits are required.

The second component of the Project would only occur if Alternative 2, which includes moving fill dirt from Planning Area 14 to the Project site across Bedford Wash, is implemented. In order to move fill dirt across Bedford Wash, fill would be temporarily placed on top of the existing concrete pad crossing Bedford Canyon Wash to both protect the concrete pad and function as a ramp to gain elevation. A notch would be graded into the plateau to the south of Bedford Wash and scrapers would move dirt across the temporary earthen ramp placed on the existing concrete pad crossing Bedford Wash. The placement of temporary fill on the concrete pad would cover an area of 0.09 acre of Waters of the State/MSHCP Features and 0.06 acres of Waters of the United States, which matches the area of the existing concrete pad crossing (Figure 12). No temporary fill dirt would be placed in the soft-bottom portion of Bedford Wash. Since the proposed ramp is located in an area that consists of existing concrete and was previously disturbed through authorization of Regulatory Permits for the widening and restoration of Bedford Canyon Wash, and those permits remain active, no new impacts to Waters of the State, Waters of the United States, or MSHCP Features would occur and no additional Regulatory Permits are required.

6.7 Potential Impacts to MSHCP Features

As part of Project implementation an outlet will be installed within the buried riprap slope protection of Bedford Canyon Wash. Please refer to the discussion within Section 6.6. Since the proposed outlet structure, and should Alternative 2 be implemented the dirt ramp, are located in an area of Bedford Wash that was previously disturbed through authorization of Regulatory Permits and MSHCP Consistency for the widening and restoration of Bedford Canyon Wash, no new impacts to MSHCP Riparian/Riverine Features would occur.

A separate MSHCP Consistency Analysis Report has been prepared, which analyzes whether project impacts are consistent with MSHCP goals and objectives.

7.0 BMPs/PDFs Incorporated into the Project and MMRP

The Project will comply with the following:

- Work area limits will be defined and respected. All grading areas will have their boundaries clearly flagged or marked before Project implementation and all disturbances will be confined to the flagged areas. All key Project personnel will be instructed that their activities must be confined to locations within the flagged areas. Disturbance beyond the actual grading zone is prohibited without site-specific surveys.

- Cleared or trimmed non-native, exotic vegetation, and woody debris will be disposed of in a legal manner at an approved disposal site.

- Employees, contractors, and site visitors will be prohibited from collecting plants and wildlife.

- Water pollution and erosion control plans will be developed and implemented in accordance with SWPPP requirements.

- Access to construction sites will be via preexisting access routes.

- Construction equipment will be properly maintained; construction employees and contractors will be trained on proper implementation and monitoring of BMPs; and procedures will be implemented to minimize the likelihood of hazardous spills and to control sediment-laden runoff.

- Effective perimeter control BMPs to control discharge of pollutants from the Project site during construction.

- All temporary construction-related night lighting used in onsite development areas will be shielded and/or directed downward to avoid indirect impacts to nocturnal wildlife such that night lighting could increase predation rates.

- All construction contractors, subcontractors, and employees will comply with the litter and pollution laws and will institute a litter control/removal program during the course of construction activities to reduce the attractiveness of the area to opportunistic predators such as coyotes, opossums, and common ravens.

- Active nests (nests with chicks or eggs) cannot be removed or disturbed. Nests may be removed or disturbed by a qualified biologist, if not active.

8.0 Significance Determination and Proposed Mitigation

8.1 Threshold No. 1

Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

No special status plant species exist on the Project site. Furthermore, no suitable habitat for the plant species and eight of the wildlife species identified within Table 6 is found within the Project site, and no observations of the species have been made.

It was determined the Study Area contains habitat for the California Horned Lark and limited habitat for the red-diamond rattlesnake. Pre-construction nesting bird surveys as outlined within **MM_BIO-1** shall occur to prevent any construction-related noise impacts during the typical nesting bird season on nesting bird species protected under MBTA. Furthermore, Biological Monitoring shall occur during initial ground disturbances to identify and locate any red-diamond rattlesnake within the Project site as outlined within **MM BIO-2**. Should any red-diamond rattlesnake species be located within the Project site, construction and earthwork within the area shall cease to allow for the species to vacate the area safely to prevent any impacts by construction-related earthwork on the species.

The Migratory Bird Treaty Act protects nesting activities of both native and non-native bird species. Under the Act it is unlawful to harm, harass, or take a nest. Since removal of vegetation could result in impacts to nesting birds, the following mitigation measure is included to reduce impacts to less than significant.

MM BIO – 1: The removal of potential nesting bird habitat shall be conducted outside of the nesting season (February 15 to September 15) to the extent feasible. If grading or site disturbance is to occur between February 15 and September 15, a nesting bird survey shall be conducted by a qualified biologist within no more 5 days of scheduled vegetation removal, to determine the presence of nests or nesting birds. If active nests are identified, the biologist would establish buffers around the vegetation (500 feet for raptors and sensitive species, 200 feet for non-raptors/non-sensitive species). All work within these buffers would be halted until the nesting effort is finished (i.e. the juveniles are surviving independent from the nest). The onsite biologist would review and verify compliance with these nesting boundaries and would verify the nesting effort has finished. Work can resume when no other active nests are found. Alternatively, a qualified biologist may determine that construction can be permitted within the buffer areas and would develop a monitoring plan to prevent any impacts while the nest continues to be active (eggs, chicks, etc.). Upon completion of the survey and any follow-up construction avoidance management, a report shall be prepared and submitted to CDFW for mitigation

monitoring compliance record keeping. If vegetation clearing is not completed within 5 days of a negative survey, the nesting survey must be repeated to confirm the absence of nesting birds.

Red-diamond Rattlesnake is a CDFW species of special concern. Since removal of the heavy brush could result in impacts to the species, the following mitigation measure is included to reduce impacts to less than significant.

> **MM BIO – 2:** A Biological Monitor shall be onsite during the initial ground disturbances to identify and locate any red-diamond rattlesnake within the Project site. Should any red-diamond rattlesnake species be located within the Project site, construction and earthwork within the immediate area of the identified species shall cease to allow for the species to vacate or be relocated from the area safely. Work can resume when the species has vacated the immediate ground disturbances work area.

With the implementation of MM BIO-1 and MM BIO-2, potential impacts to nesting birds and special status wildlife species are reduced to a less than significant level.

8.2 Threshold No. 2

Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

As part of both of the alternatives and overall Project implementation an outlet will be installed within the buried riprap slope protection of Bedford Canyon Wash. The apron for the outlet opening occurs at the downstream concrete Wash crossing. Furthermore, for the import of dirt utilizing dirt from Planning Area 14, a temporary dirt bridge and culvert will be placed on the existing concrete pad crossing and removed following grading operation completion. Since the proposed outlet structure (for both alternatives), and dirt ramp (for Alternative 2), are located in an area of Bedford Wash that was previously disturbed through authorization of Regulatory Permits for the widening and restoration of Bedford Canyon Wash, no new impacts to Waters of the State or Waters of the United States would occur and no additional Regulatory Permits are required. The outlet is located within the slope and beyond jurisdiction of Waters of the US. Furthermore, no riparian habitat or sensitive natural communities is identified within this area; therefore, no impacts to riparian habitat or sensitive natural communities would occur and no mitigation is required. Further discussion can be found in Section 6.6.

8.3 Threshold No. 3

Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

As part of Project implementation an outlet will be installed within the buried riprap slope protection of Bedford Canyon Wash. The apron for the outlet opening occurs at the downstream concrete Wash crossing. Since the proposed outlet structure is located in an area of Bedford Wash that was previously disturbed through authorization of Regulatory Permits for the widening and restoration of Bedford Canyon Wash, no new impacts to Waters of the State would occur and no additional Regulatory Permits are required. The outlet is located within the slope and beyond jurisdiction of Waters of the US. This area was previously disturbed and outside of the original limits of Bedford Canyon Wash prior to the widened Wash. As a result, no additional permits are required with Project implementation. Furthermore, the Project will not have a substantial adverse effect on federally protected wetlands as define by Section 404, since the minimal impacts are expected to occur within the riprap slope protection; therefore, no impacts to federally protected wetlands as define by Section 404 would occur and no mitigation is required.

8.4 Threshold No. 4

Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory corridors, or impede the use of native wildlife nursery sites?

Bedford Canyon Wash may serve a function in local wildlife movement. Bedford Canyon Wash provides connectivity between the Santa Ana Mountains and Lake Matthews and does provide a connection between large areas of undeveloped land, which may be utilized for wildlife movement. Furthermore, with the implementation of the widened and restored Bedford Canyon Wash, it will continue to provide a valuable linkage for wildlife. Project implementation will not impact the ability of Bedford Canyon Wash to continue to serve as a movement corridor. Therefore, no impacts to wildlife movement are anticipated as a result of implementation of the Project.

Since removal of vegetation could result in impacts to nesting birds, **MM BIO-1** shall be implemented to reduce impacts to less than significant.

8.5 Threshold No. 5

Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The City does not have any local policies, such as a tree preservation ordinance, that protect biological resources. Therefore, no impacts would occur, and no mitigation is necessary.

8.6 Threshold No. 6

Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The Project site is located within the MSHCP, specifically within the Temescal Canyon Area Plan. A Project Consistency Analysis has been prepared analyzing the impacts and mitigation measures.

As part of Project implementation an outlet will be installed within the buried riprap slope protection of Bedford Canyon Wash. The apron for the outlet opening occurs at the downstream concrete Wash crossing. Furthermore, as part of Project impacts, the alternative 2 would create a temporary dirt bridge placed on the existing concrete pad crossing and removed following grading operation completion. Since the proposed outlet structure (both import alternatives) and temporary dirt bridge (Alternative 2) are located in an area of Bedford Wash that was previously disturbed through authorization of Regulatory Permits and MSHCP Consistency for the widening and restoration of Bedford Canyon Wash, no new impacts to MSHCP Riparian/Riverine Features would occur.

The Project site falls within Narrow Endemic Plants (Survey Area Number 7). As concluded in Section 6.2 above, no special status plant species were observed during the 2019 surveys and none are expected to occur onsite due to the lack of suitable habitat found on the Project site; therefore, there are no impacts to Narrow Endemic Plants and no conflicts with an approved conservation plan for either dirt import alternatives and Project implementation.

Furthermore, the Project site contains the BUOW overlay. As a result, a series of four focused BUOW survey was conducted per MSHCP Section 6.3.2 and MSHCP protocol Focused Survey Instructions. While potentially suitable habitat exists onsite, no BUOW, suitable burrows, or signs of BUOW were present during the surveys. Complete results can be found within the Focused BUOW Report in Appendix A. Since BUOW are migratory species, **MM BIO – 3** shall be implemented prior to ground disturbance.

> **MM BIO – 3:** Pre-construction presence/absence surveys for burrowing owl within the survey area where suitable habitat is present shall be conducted by a qualified biologist within 30 days of ground disturbing activities. If active burrowing owl burrows are detected during the breeding season, all work within 300 feet of any active burrow will

be halted until that nesting effort is finished. The on-site biologist will review and verify compliance with these boundaries and will verify the nesting effort has finished. Work can resume when no other active burrowing owl burrows nests are found.

If active burrowing owl burrows are detected outside the breeding season or during the breeding season and it is determined nesting activities have not begun, then passive and/or active relocation may be approved following consultation with CDFW. The installation of one-way doors may be installed as part of a passive relocation program. Burrowing owl burrows shall be excavated with hand tools when determined to be unoccupied by Project biologist, and back filled to ensure that animals do not re-enter the burrows. Upon completion of the survey and any follow-up construction avoidance management, a report shall be prepared and submitted to CDFW, and the City for mitigation monitoring compliance record keeping.

With the implementation of MM BIO-3, potential impacts to existing MSHCP features are reduced to a less than significant level.

9.0 Cumulative Impacts

Direct impacts may occur to nesting birds, should construction activities and vegetation removal take place during the typical nesting season, regardless of the alternative implemented. However, adherence to the BMPs as outlined in Section 7.0, as well as implementation of MM-Bio 1, and MM-Bio 2 will ensure impacts to special status species or their habitats are minimized thus reducing the Project's contribution to cumulative impacts to less than significant.

As part of both import alternatives, an outlet will be installed within the buried riprap slope protection of Bedford Canyon Wash. The apron for the outlet opening occurs at the downstream concrete Wash crossing. Furthermore, as part of Alternative 2: PA14 Dirt Import, a temporary dirt bridge and culvert will be placed on the existing concrete pad crossing and removed following grading operation completion. Since the proposed outlet structure is located in an area of Bedford Wash that was previously disturbed through authorization of Regulatory Permits and MSHCP Consistency for the widening and restoration of Bedford Canyon Wash, no new impacts to MSHCP Riparian/Riverine Features would occur.

Furthermore, the MSHCP was specifically designed to cover a large geographical area so that it would protect numerous special-status species and sensitive habitats throughout the region. It is the projected cumulative effect of future development that has required the preparation and implementation of the MSHCP to protect multiple habitats and species. Because the MSCHP provides a regional and comprehensive approach to conservation planning, the proposed Project's contribution to cumulative impacts would also be less than significant.

10.0 Literature Cited

Amphibiaweb. 2019. Species Accounts. Retrieved from: http://amphibiaweb.org/search/index.html

AOU (The American Ornithologists' Union). 1998. Check-List of North American Birds. 7th Edition. American Ornithologists' Union, Washington, D.C. 829 pp.

Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors. 2012. The Jepson Manual: Vascular Plants of California, second edition. University California Press, Berkeley.

Bowers, N., R. Bowers, and K. Kaufman. 2004. Mammals of North America. Houghton Mifflin Company, New York.

Brady, Roland H. III, Kris Vyverberg. 2013. Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants. California Energy Commission. Publication Number: CEC-500-2014-013.

Calflora. 2019. Calflora website - search for plants. Retrieved from: http://www.calflora.org/species/index.html.

CaliforniaHerps.com. 2019. California Herps. A Guide to the Reptiles and Amphibians of California. Retrieved from: http://www.californiaherps.com/.

Cal-IPC (California Invasive Plant Council). 2006. California Invasive Plant Inventory. Cal-IPC Publication 2006-02. California Invasive Plant Council: Berkeley, CA. Retrieved from: http://www.cal-ipc.org/ip/inventory/index.php.

CDFW (California Department of Fish and Wildlife). 2019. Natural Communities List. Biographic Data Branch. The Vegetation Classification and Mapping Program. https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities.

CDFW (California Department of Fish and Wildlife). 2019a. California Endangered Species Act (CESA). Retrieved from: https://www.wildlife.ca.gov/Conservation/CESA.

CDFW (California Department of Fish and Wildlife). 2019b. California Environmental Quality Act (CEQA). Retrieved from: https://www.wildlife.ca.gov/Conservation/CEQA.

CDFW (California Department of Fish and Wildlife). 2019c. Fish and Game Code Section 1600-1616. Retrieved from: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=3784.

CDFW (California Department of Fish and Wildlife). 2019d. Lake and Streambed Alteration Program. Retrieved from: https://www.wildlife.ca.gov/Conservation/LSA.

CDFW (California Department of Fish and Wildlife). 2019e. Life History Accounts and Range Maps – California Wildlife Habitat Relationship System. Retrieved from: https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range.

CDFW (California Department of Fish and Wildlife). 2019f. RareFind, California Department of Fish and Wildlife, California Natural Diversity Database (CNDDB). State of California, The Natural Resources Agency, Department of Fish and Wildlife, Biogeographic Data Branch, California Natural Diversity Database, Sacramento, CA.

CDFW (California Department of Fish and Wildlife), Natural Diversity Database. Aug 2019g. Special Vascular Plants, Bryophytes, and Lichens List. Quarterly publication. 140 pp.

CDFW (California Department of Fish and Wildlife), Natural Diversity Database. Aug 2019h. Special Animals List. Periodic publication. 67 pp.
Retried from: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406.

CDFW (California Department of Fish and Wildlife). 2019i. State and Federally Listed Endangered, Threatened, and Rare Plants of California. State of California, The Resources Agency, Department of Fish and Wildlife, Resource Management and Planning Division, Biogeographic Data Branch, California Natural Diversity Database, Sacramento, CA.

Clark, W.S. and B.K. Wheeler. 2001. A Field Guide to Hawks of North America, Second Edition. Houghton Mifflin Company, Boston and New York.

California Native Plant Society, Rare Plant Program. 2019. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 12 March 2018].

Corps (United States Army Corps of Engineers). 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

Eder, Tamara. 2005. Mammals of California. Lone Pine Publishing International Inc, Auburn, WA.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, U.S. Army Engineer Waterways Experimental Station, Vicksburg, Mississippi.

EPA (United States Environmental Protection Agency). 2011. Laws and Regulations. Summary of the Endangered Species Act.
Retrieved from: http://www.epa.gov/lawsregs/laws/esa.html

Fahrig, L., and G. Merriam. 1985. Habitat patch connectivity and population survival. Ecology 66:1762-1768.

Federal Interagency Committee for Wetland Delineation. 1989. Federal Manual for Identifying and Delineating Jurisdictional Wetlands. U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and USDA Soil Conservation Service, Washington, DC Cooperative technical publication.

Fish and Game Commission. 2019. California Law. California Fish and Game Code. Retrieved from: http://leginfo.legislature.ca.gov/faces/codesTOCSelected.xhtml?tocCode=FGC&tocTitle=+Fish+and+Game+Code+-+FGC

Google. 2019. GoogleEarth© website.

Government Printing Office. 1991. Federal Register, 1989 "Federal Manual for Identifying Jurisdictional Wetlands; Proposed Revisions." August 14, 1991, Vol. 56, No. 157, pp 40446-40480.

Harris, L.D. and Gallagher, P.B. 1989. New initiatives for wildlife conservation: The need for movement corridors. In defense of wildlife: Preserving communities and corridors. pp. 11-34. Edited by G. Mackintosh. Defenders of Wildlife, Washington, DC.

Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. State of California, The Resources Agency, Nongame Heritage Program, California Department of Fish & Game, Sacramento, Calif. 156 pp.

Jennings, M.R. and M.P. Hayes. 1994. Amphibian and Reptile Species of Special Concern in California. Submitted to the California Department of Fish and Game Inland Fisheries Division. Rancho Cordova, CA.

National Geographic Society. Edited by Jonathan Alderfer. 2006. Complete Birds of North America. National Geographic Society. Washington D.C.

NatureServe. 2019. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://explorer.natureserve.org.

NRCS (Natural Resource Conservation Service). 2019. Web Soil Survey. U.S. Department of Agriculture Natural Resources Conservation Service. Retrieved from: http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

Riverside, County of. June 2003. *Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP)*. Prepared by Dudek.

Sibley, David Allen. 2000. National Audubon Society, The Sibley Guide to Birds. Alfred A. Knopf, New York.

Simberloff, D., and J. Cox. 1987. Consequences and costs of conservation corridors. Conservation Biology. 1:63-71.

Soule, Michael E. 1987. Viable populations for conservation. Cambridge University Press. Cambridge Cambridgeshire and New York.

SWRCB (State Water Resources Control Board). 2011. Porter-Cologne Water Quality Control Act with Additions and Amendments Effective April 2017. Compiled by the Office of Chief Counsel.
Retrieved from: http://www.swrcb.ca.gov/laws_regulations/docs/portercologne.pdf

USDA (United States Department of Agriculture) Natural Resources Conservation Service. 1995. Hydric Soils of California.

USFWS (United States Fish and Wildlife Service). 2019a. FWS Critical Habitat for Threatened and Endangered Species. Retrieved from https://www.fws.gov/endangered/.

USFWS (United States Fish and Wildlife Service). 2019b. Migratory Birds & Habitat Programs. Migratory Bird Treaty Act. Retrieved from: https://www.fws.gov/birds/policies-and-regulations.php.

USFWS (United States Fish and Wildlife Service). 2019c. National Wetlands Inventory. Wetlands Mapper. Retrieved from: http://www.fws.gov/wetlands/Data/mapper.html.

WTI (Wetland Training Institute, Inc.). 1999. Field Guide for Wetland Delineation: 1987 Corps of Engineers Manual. Glenwood, NM WTI 99-1. 143 pp.

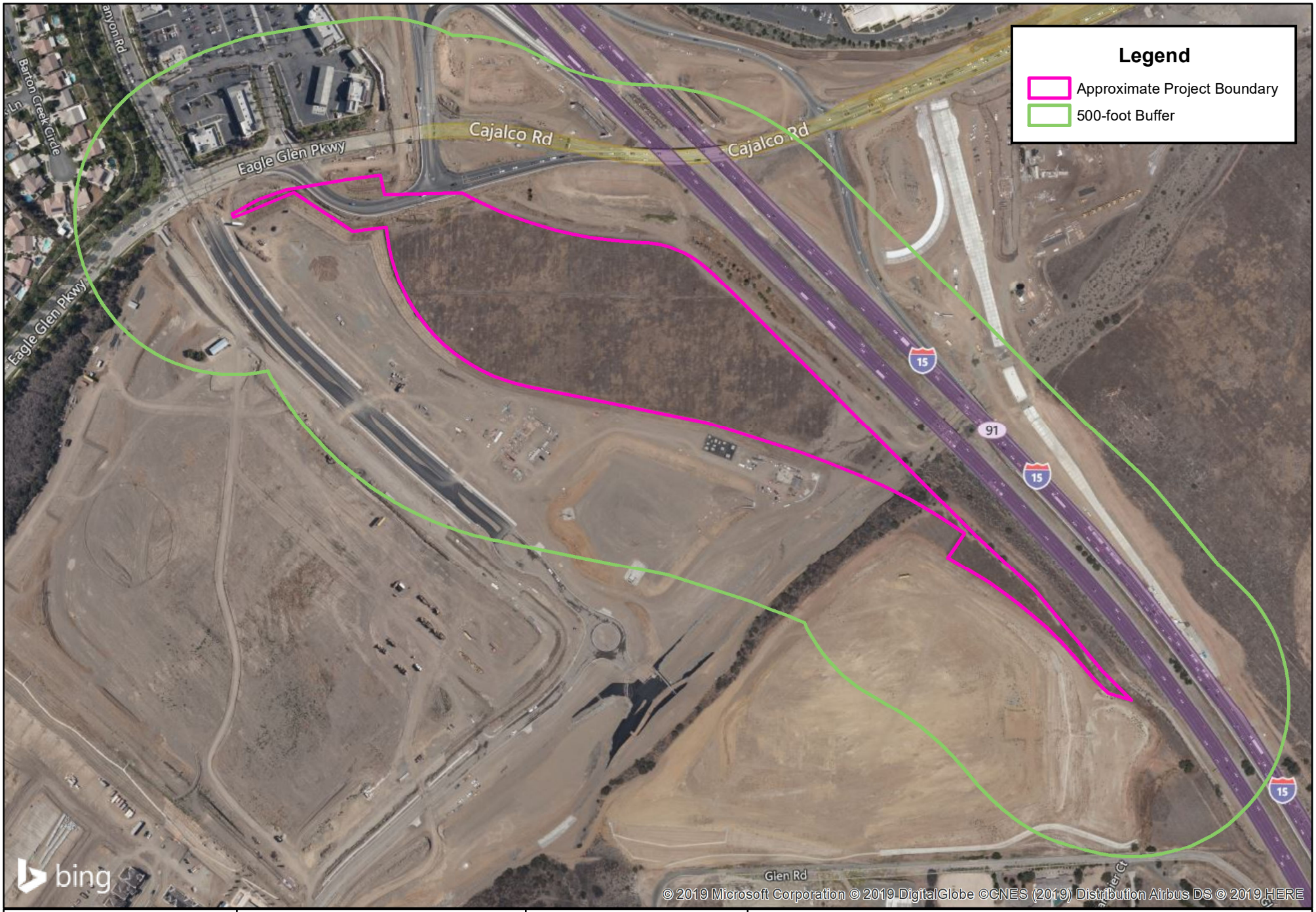
WTI (Wetland Training Institute, Inc.). 2003. Wetland Delineation Lecture Notes and Field Guide for Wetland Delineation based on the Corps of Engineers 1987 Manual. WTI, New Mexico.

Figures



GIS Prepared By: Carlson SLS Created: August 2, 2019	0 1,250 2,500 5,000 Feet 1 inch = 5,000 feet	Data Sources: Bing Maps	***Guardian Capital: Bedford Marketplace*** Regional Map

FIGURE 1



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

0 100 200 400 600 800 Feet

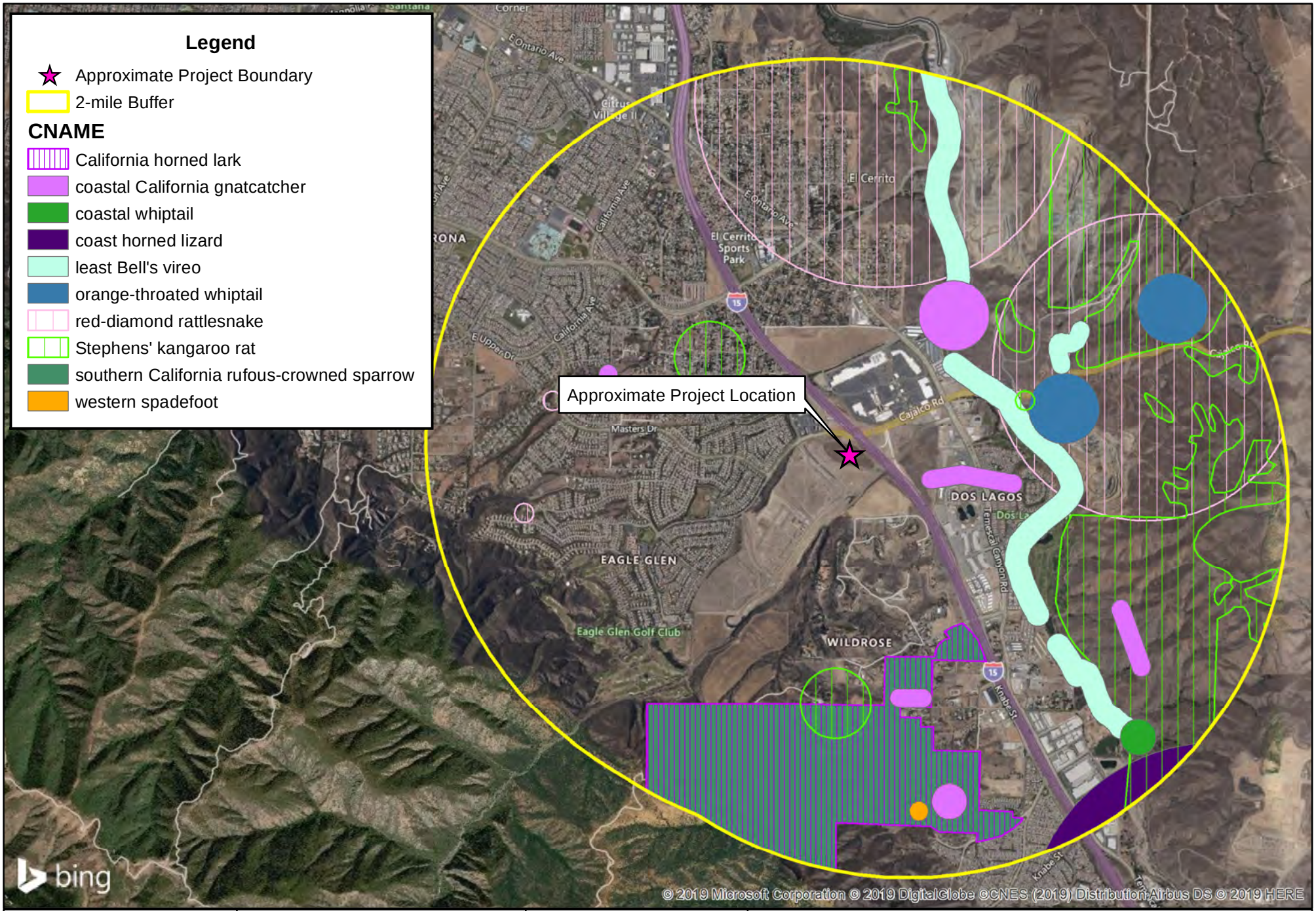
1 inch = 400 feet

Data Source: Bing Maps

Guardian Capital: Bedford Marketplace

Vicinity Map

FIGURE 2



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

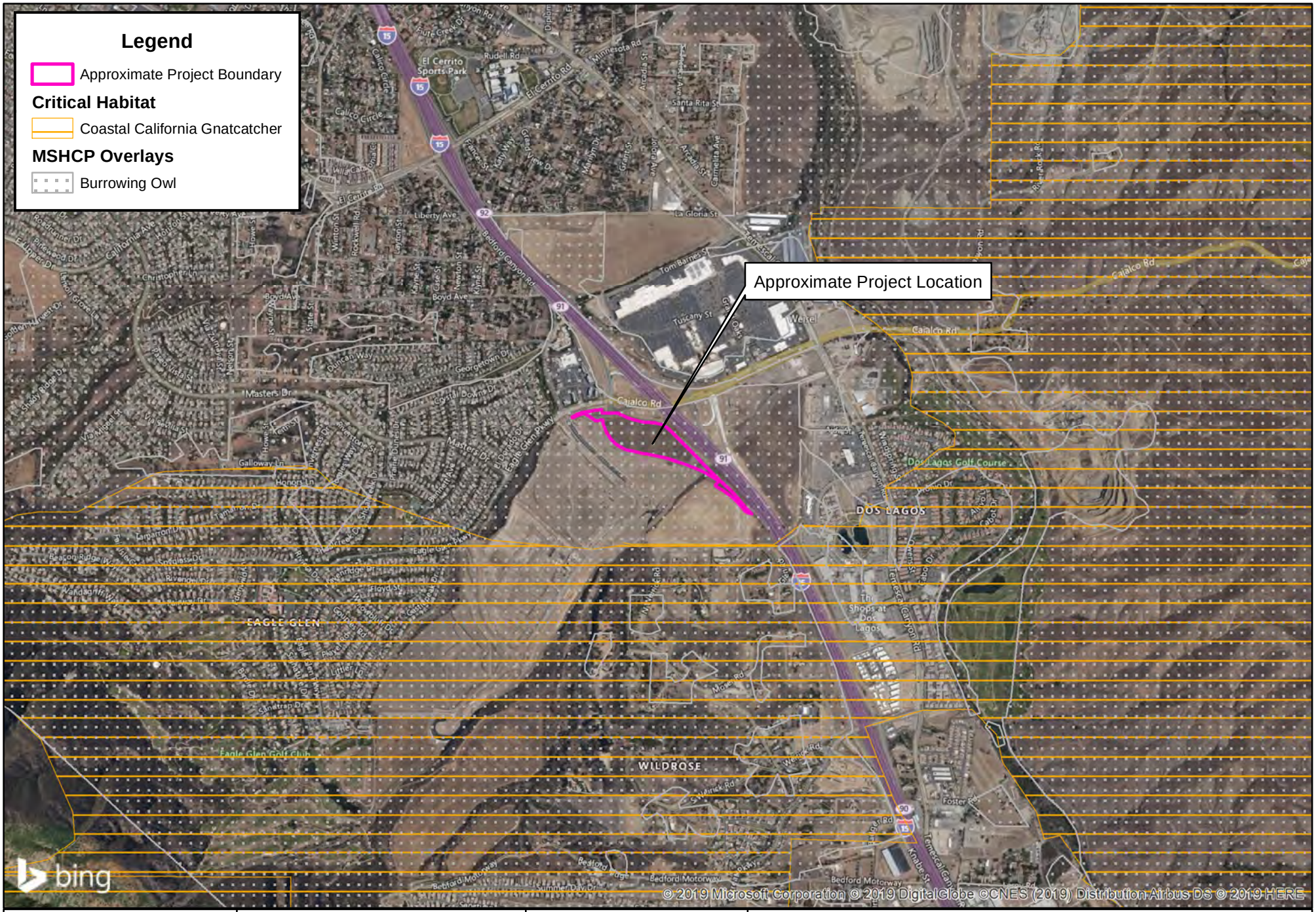
0 1,750 3,500 7,000 Feet
1 inch = 3,500 feet

Data Source: Bing Maps
CNDDB (06/2019)

Guardian Capital: Bedford Marketplace

CNDDB Occurrences Results

FIGURE 3



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

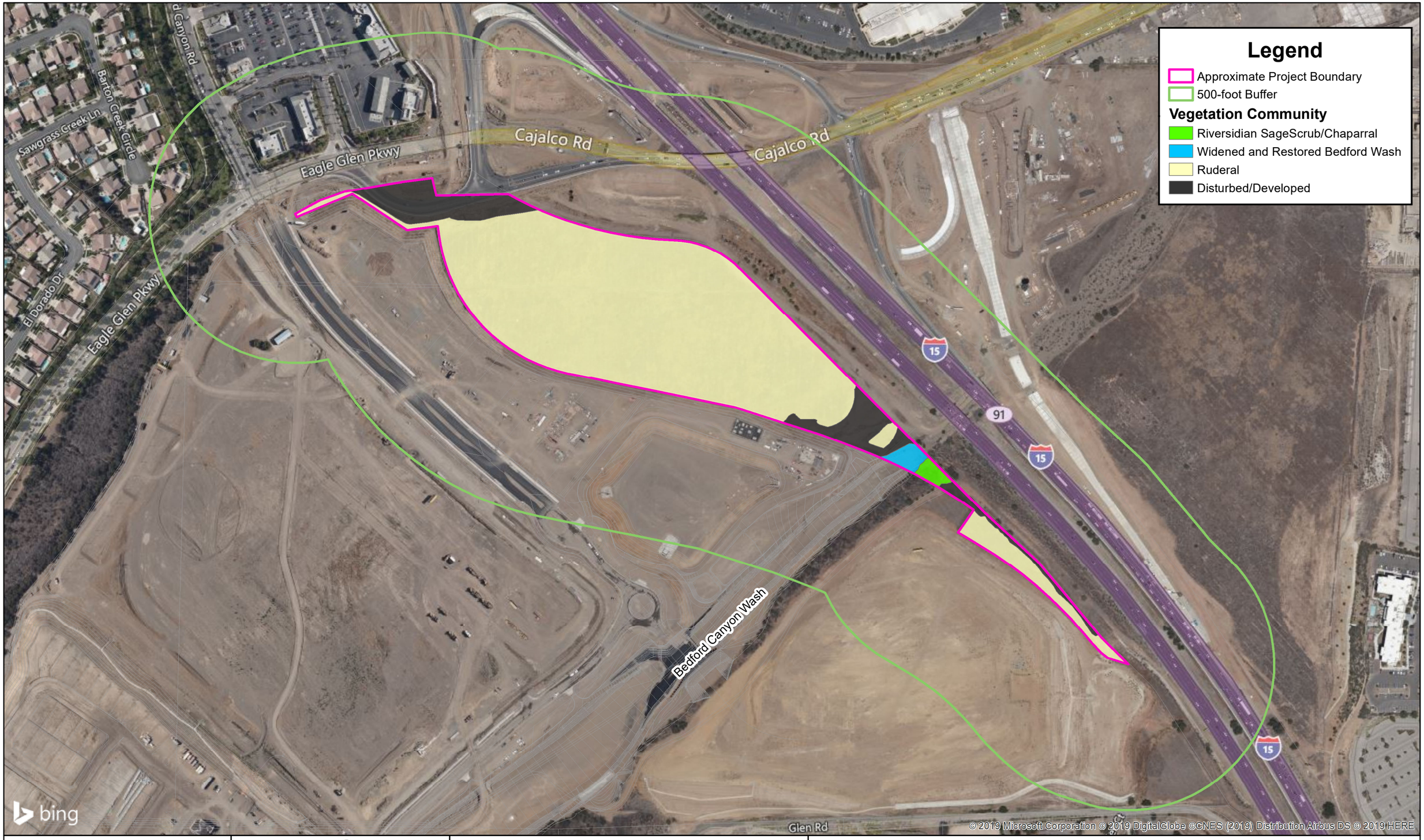
0 500 1,000 2,000 3,000 4,000 Feet
1 inch = 2,000 feet

Data Source: Bing Maps
CH (03/2015)

Guardian Capital: Bedford Marketplace

Critical Habitat and MSHCP Overlay Results

FIGURE 4



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

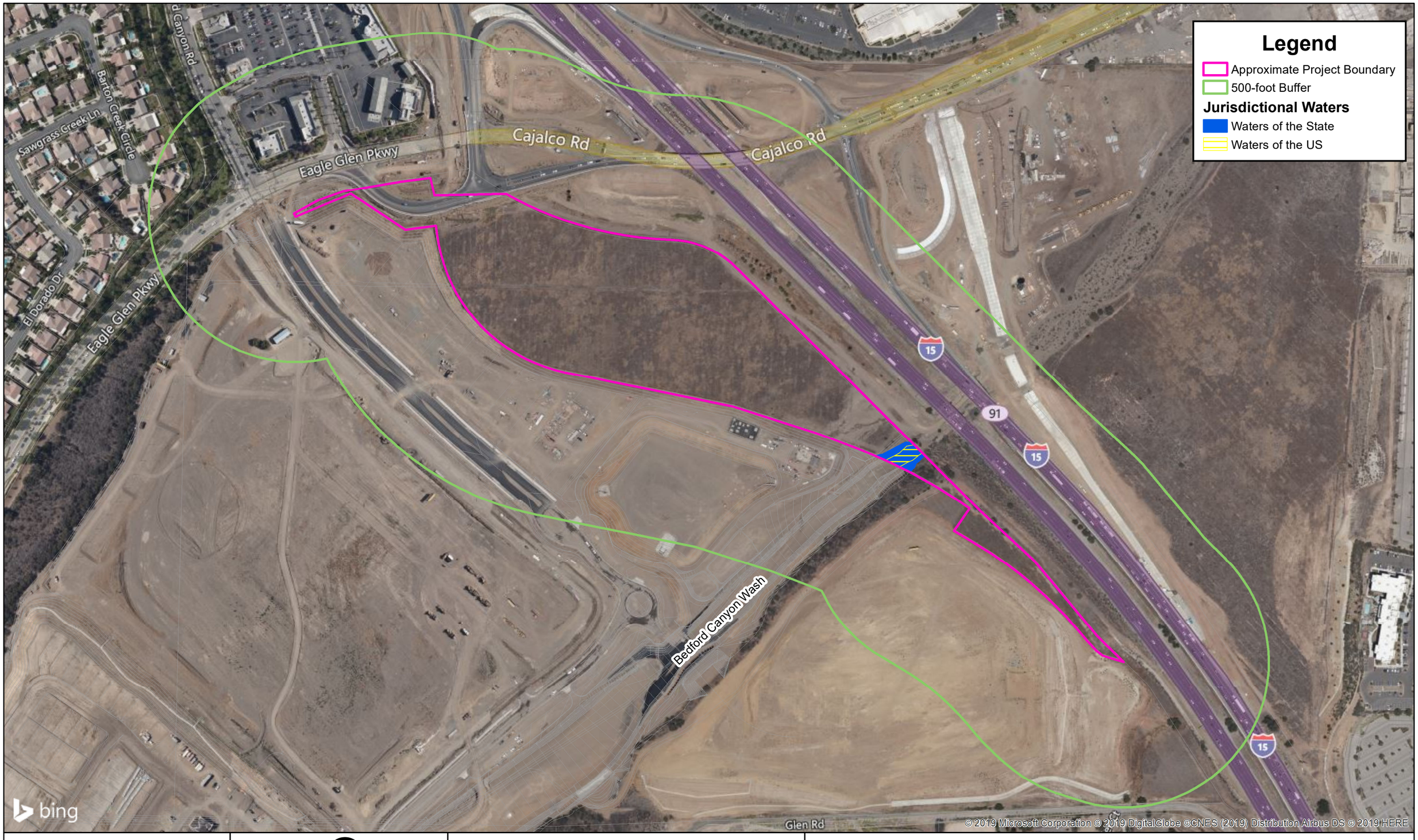
0 75 150 300 450 600 Feet
1 inch = 300 feet

Data Source: Bings Map
Field Visit (06/27/19)

Guardian Capital: Bedford Marketplace

Vegetation Map

FIGURE 5



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

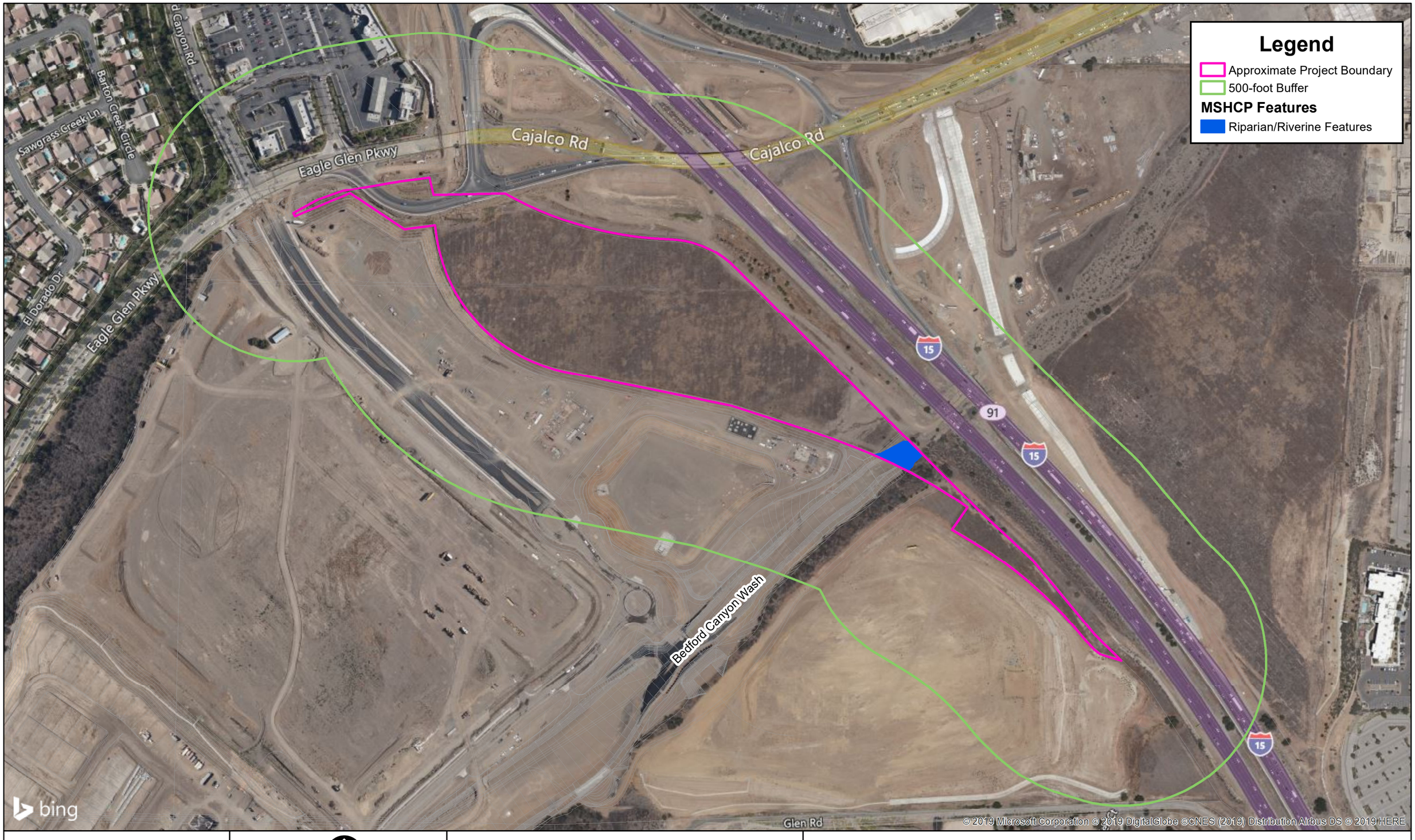
Feet
0 75 150 300 450 600
1 inch = 300 feet

Data Source: Bings Map
Field Visit (06/27/19)

Guardian Capital: Bedford Marketplace

Jurisdictional Delineation

FIGURE 6



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

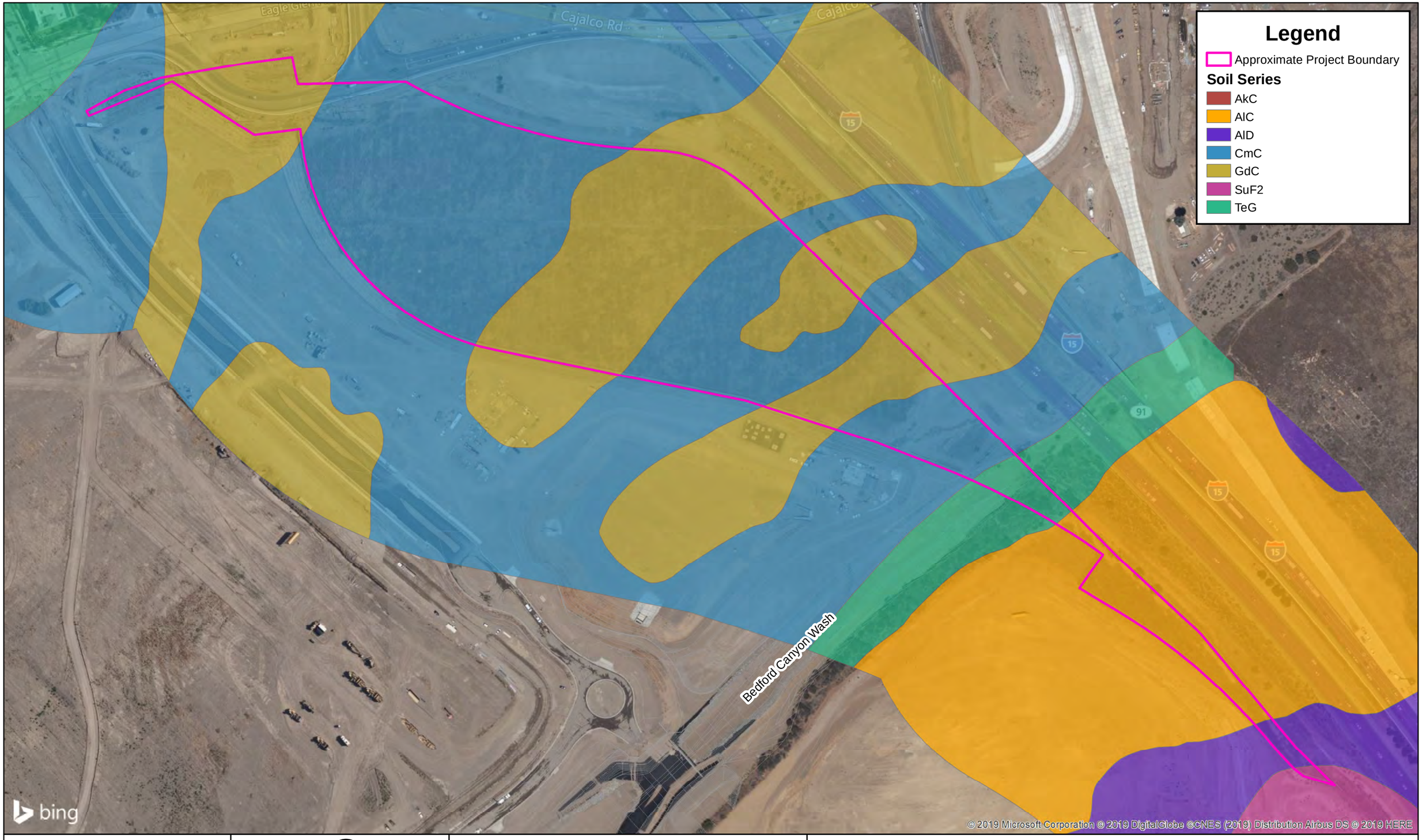
0 75 150 300 450 600 Feet
1 inch = 300 feet

Data Source: Bings Map
Field Visit (06/27/19)

Guardian Capital: Bedford Marketplace

MSHCP Riparian/Riverine Features

FIGURE 7



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

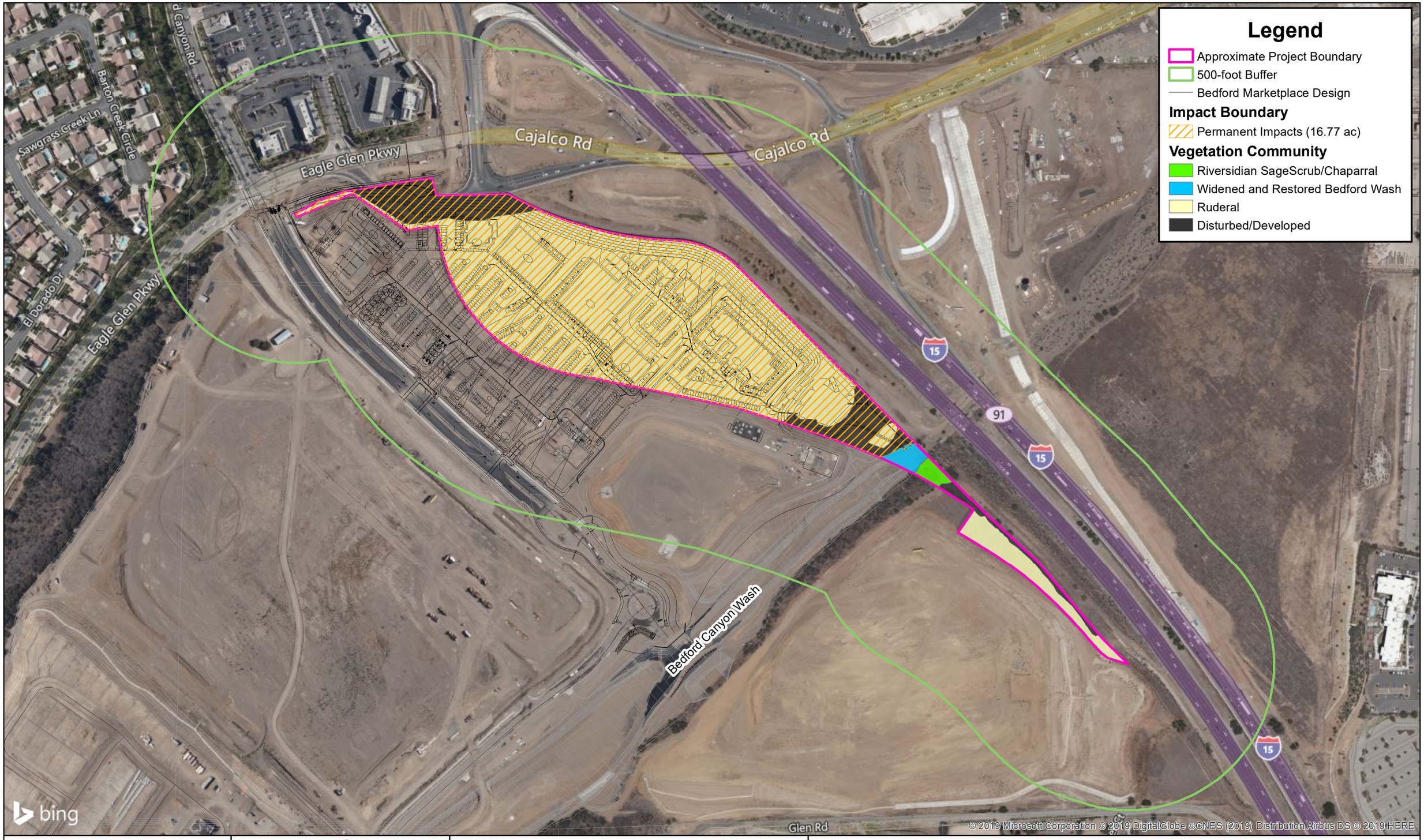
0 50 100 200 300 400 Feet
1 inch = 200 feet

Data Source: Bings Map
Field Visit (06/27/19)

Guardian Capital: Bedford Marketplace

Soil Map

FIGURE 8



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

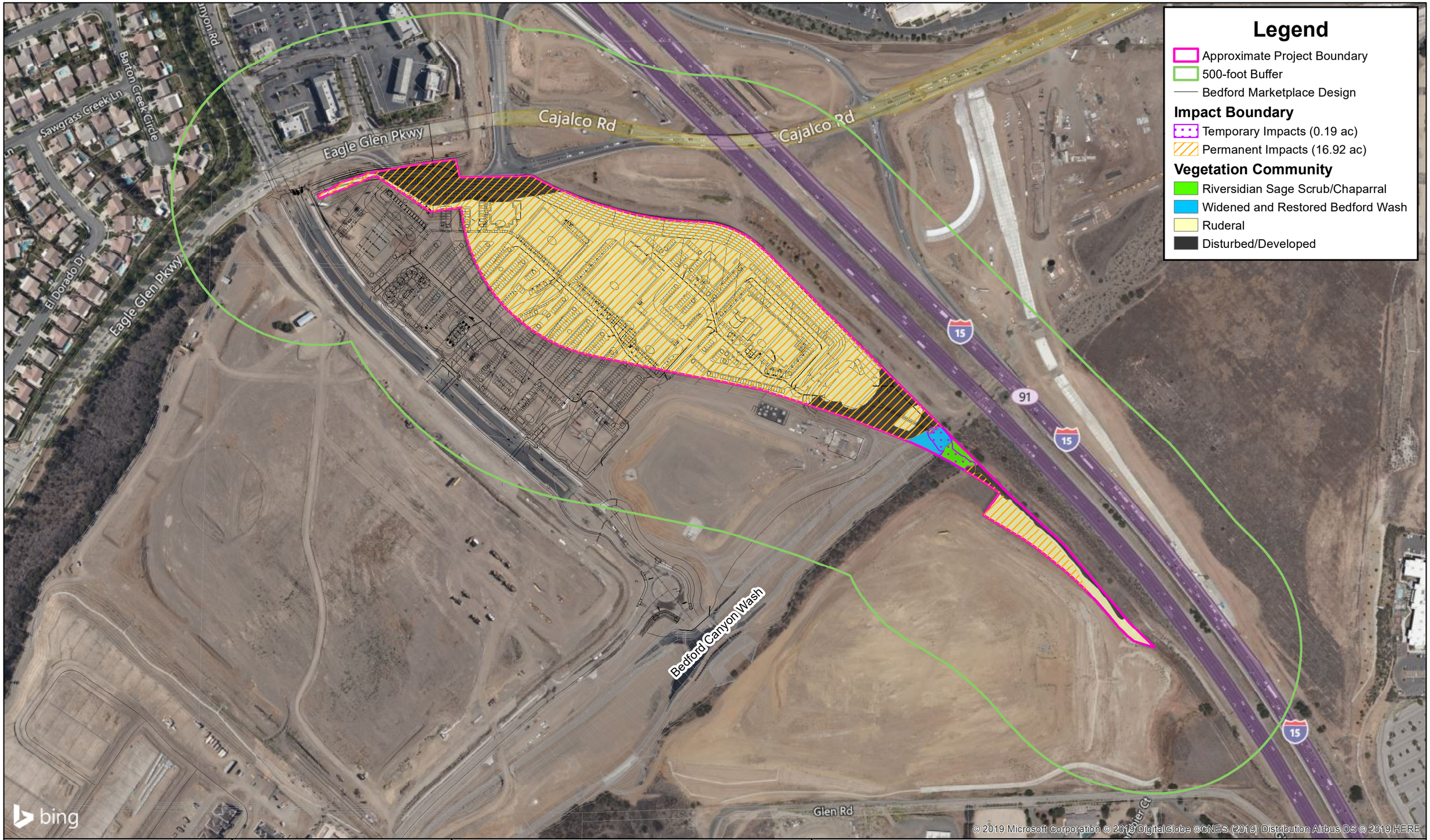
0 75 150 300 450 600 Feet
1 inch = 300 feet

Data Source: Bings Map
Field Visit (06/27/19)
Hunsaker (08/08/19)

Guardian Capital: Bedford Marketplace

Alternative 1: Off-site Dirt Import Vegetation Impacts Map

FIGURE 9



GIS Prepared By:
Carlson SLS

Created: October 7, 2019

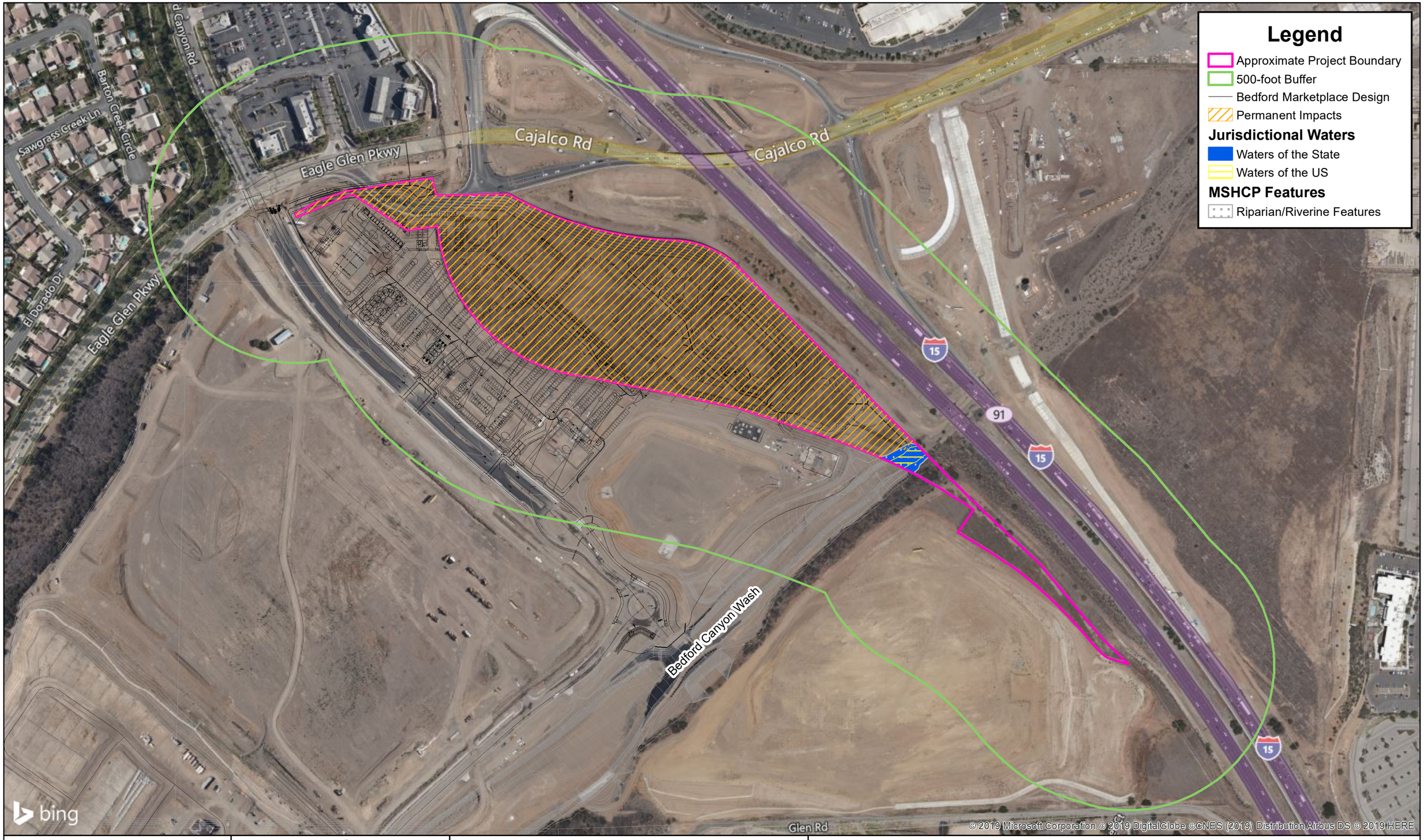
0 75 150 300 450 600 Feet
1 inch = 300 feet

Data Source: Bing Map
Field Visit (06/27/19)
Hunsaker (09/05/19)

Guardian Capital: Bedford Marketplace

Alternative 2: PA 14 Dirt Import Vegetation Impacts Map

FIGURE 10



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

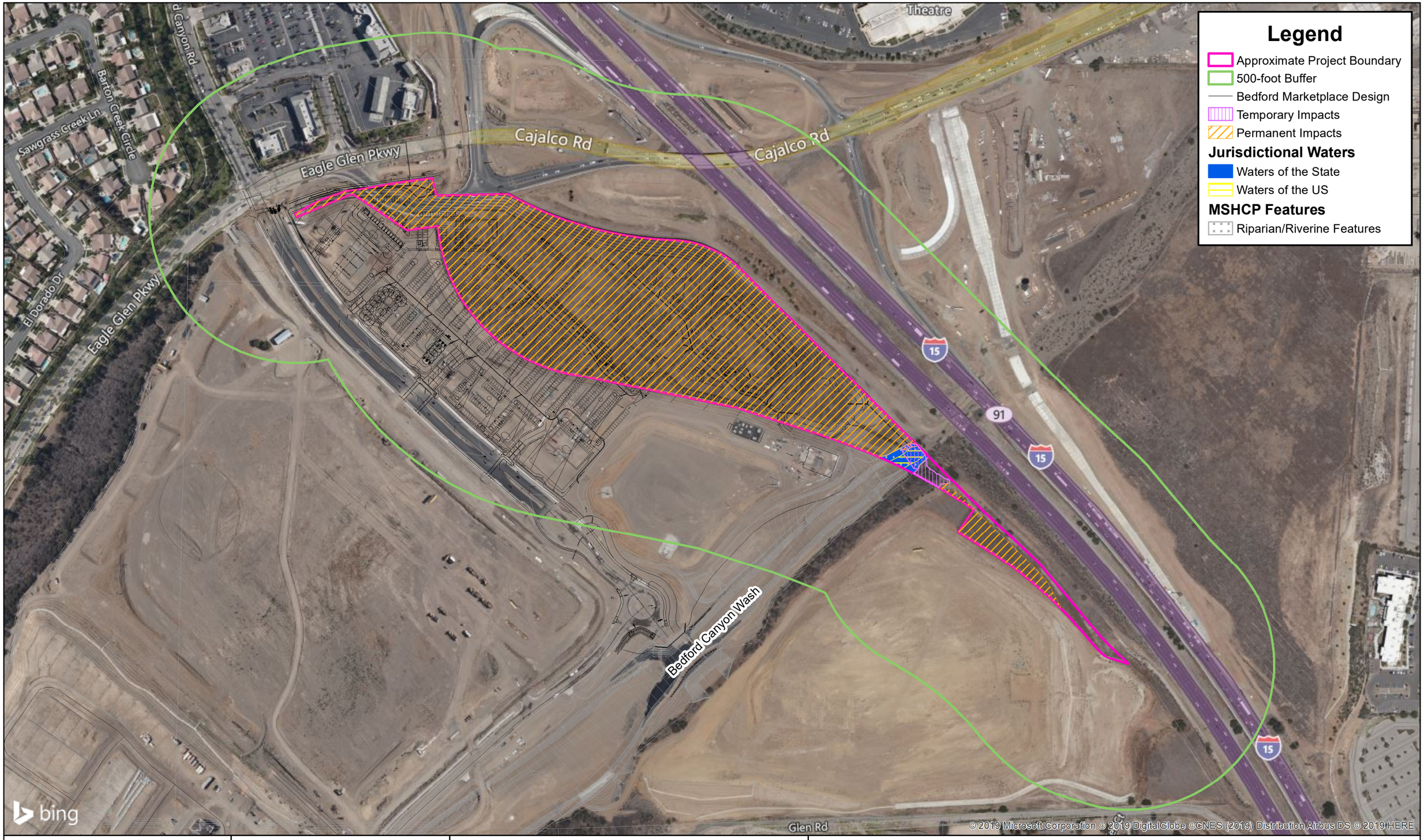
0 75 150 300 450 600 Feet
1 inch = 300 feet

Data Source: Bings Map
Field Visit (06/27/19)
Hunsaker (08/08/19)

Guardian Capital: Bedford Marketplace

Alternative 1: Off-site Dirt Import Jurisdictional and MSHCP Feature Impacts

FIGURE 11



GIS Prepared By:
Carlson SLS

Created: October 7, 2019

0 75 150 300 450 600 Feet
1 inch = 300 feet

Data Source: Bings Map
Field Visit (06/27/19)
Hunsaker (09/05/19)

Guardian Capital: Bedford Marketplace

Alternative 2: PA 14 Dirt Import Jurisdictional and MSHCP Feature Impacts

FIGURE 12

APPENDIX A

Focused Survey Results

Results of Focused Burrowing Owl Survey for the Bedford Marketplace Project

***Prepared for*:**

Guardian Capital
5780 Fleet Street, Suite 225
Carlsbad, CA 92008
Contact: Glen Powles



Prepared by:

Carlson Strategic Land Solutions
327134A Paseo Espada, Suite 323
San Juan Capistrano, CA 92675
Phone: (949) 542-7042
Contact: Brianna Bernard

August 2019

TABLE OF CONTENTS

1.0 Introduction 3

1.1 Project Terms 3
1.2 Project Location 3
1.3 Existing and Historical Land Use 4
1.4 MSHCP Survey Requirements for the Burrowing Owl 4

2.0 Methodology 5

2.1 Focused Burrow Survey 5
2.2 Focused Burrowing Owl Survey 6

3.0 Results 6

4.0 Discussion 7

5.0 Certification 8

6.0 Literature Cited 9

FIGURES

Figure 1 Regional Map
Figure 2 Project Vicinity Map
Figure 3 Transect and Burrow Map

APPENDIX

Appendix A Site Photographs

ACRONYMS, ABBREVIATIONS, AND GLOSSARY OF TERMS

BUOW	Burrowing Owl
CDFW	California Department of Fish and Wildlife
CNDDB	California Natural Diversity Database
MSHCP	Western Riverside Multiple Species Habitat Conservation Plan
Project	Bedford Marketplace Project
SLS	Carlson Strategic Land Solutions

1.0 Introduction

On behalf of Bedford Marketplace, LLC (Guardian Capital), Carlson Strategic Land Solutions (SLS) prepared this Focused Burrowing Owl Results Report, which documents the results of the focused protocol Burrowing Owl (*Athene cunicularia [BUOW]*) surveys for the proposed Bedford Marketplace Project (Project). The Project is located on approximately 18-acres in the City of Corona. The Focused BUOW Report incorporates the findings from the focused burrow and BUOW field surveys within the Study, which is comprised of the 18-acre Project site and surround 500-foot buffer. The protocol survey was conducted following the *Burrowing Owl Survey Instructions for the Western Riverside County Multiple Species Habitat Conservation Plan Area* (County of Riverside 2006). The purpose of the survey was to identify presence or absence of BUOW, suitable burrows and/or burrow surrogates, and any other sign of BUOW within the Study Area.

1.1 Project Terms

The following terms will be used throughout this document and are defined as follows:

- Project site: the approximately 18-acre Bedford Marketplace Project site.
- Study Area: the area evaluated during the field survey, including the approximately 18-acre Project site and the surrounding 500-feet (150-meters).
- Project Vicinity: intended to be a general term to describe the broader area surrounding the Study Area.

1.2 Project Location

The Project Site is located in the Bedford Canyon area of the Santa Ana Mountain foothills in the southeastern portion of Corona. The City of Corona is generally situated southwest of the City of Riverside, south of the City of Norco, and north of the City of Lake Elsinore in Riverside County, California (Figure 1). Areas surrounding the Project Site include the I-15 freeway to the east, Arantine Hills Specific Plan to the south and west; and Cajalco Road to the north (Figure 2). The Project Site is located within the United States Geological Survey (USGS) 7.5-Minute Topographic Map *Corona South* Quadrangle.

The Project Site is owned by the Riverside County Transportation Commission and has Assessor's Parcel Numbers (APN) 279-240-033 and 279-240-019.

Access to the Project site is from the residential project referred to as Bedford, located to the west of the Project site, off Eagle Glen Parkway via Hudson House Drive. Directions to the Project site from Interstate 15 (I-15) is to exit Cajalco Road and head west onto Eagle Glen Parkway. Access is obtained via Hudson House Drive.

1.3 Existing and Historical Land Use

The overall Study Area has historically been farmed for citrus production between 1962 and 2007. Prior to the 1962 aerial photograph, the Project Site was vacant land. The former agricultural operation has reverted to ruderal vegetation. The Project site is located between the new residential community of Bedford within the Arantine Hills Specific Plan (AHSP), which has been graded, and the I-15 freeway, including the Cajalco Interchange, which is currently under construction.

Bedford Canyon Wash, located to the south of the Project Site, is an ephemeral wash with a sandy bottom and sparsely vegetated alluvial fan sage scrub and non-native vegetation. The Wash receives flows from the Santa Ana mountains, through the Eagle Glen Golf Club, through the AHSP area, continuing downstream to Temescal Creek and ultimately the Santa Ana River. As part of implementation of the AHSP, Bedford Wash has been widened and improved with buried rip-rap along the banks and buried grade control structures to control erosion and scour. Two concrete crossings (upstream and downstream) provide access to the south side of the Wash and the associated maintenance access road. Restoration of Bedford Wash includes planting with an alluvial fan sage scrub seed mix.

1.4 MSHCP Survey Requirements for the Burrowing Owl

The Project site is found within the MSHCP BUOW survey area. The BUOW is designated as a "Covered Species Adequately Conserved" under MSHCP, but with specific survey/conservation requirements as described in Volume I, Section 6.3.2 of the MSHCP and species-specific objectives. Pursuant to the MSHCP, if a site occurs within the BUOW survey area, and suitable habitat is present, then focused surveys shall be conducted following the *Burrowing Owl Survey Instructions for the Western Riverside County Multiple Species Habitat Conservation Plan Area* (County of Riverside 2006). The survey instructions note the following steps to the MSHCP BUOW assessment:

- Step I: Habitat Assessment
- Step II: Locating Burrows and Burrowing Owls
    - » Part A: Focused Burrow Survey
    - » Part B: Focused Burrowing Owl Surveys (a total of 4 separate surveys)

Step I of the survey instructions requires that an assessment be conducted to determine the presence of suitable habitat for the BUOW. The habitat assessment must be conducted by walking the Project site and surrounding 500-foot buffer, where feasible. Habitat for the BUOW is varied and includes short-grass prairies, grasslands, lowland scrub, agricultural lands (particularly rangelands), coastal dunes, desert floors, and some artificial open areas. BUOW require large open expanses of sparsely vegetated areas with an abundance of active small mammal burrows. The mammal burrows are often modified and enlarged. For nesting BUOW,

one burrow is typically selected for use; however, satellite burrows are usually found within the immediate vicinity of the nest burrow within the defended territory of the owl.

Pursuant to MSHCP Section 6.3.2 and the methods are used to detect and identify BUOW included observation of key signs identified by the *California Burrowing Owl Consortium (CBOC).* This includes observation of key signs such as sight, scat, tracks, burrows, nests, and calls. All encountered burrows or structure entrances, suitable or non-suitable, were checked for the presence of BUOWs, molted feathers, cast pellets, prey remains, eggshell fragments, tracks, or excrement at or near a burrow entrance. Natural or man-made structures that could support BUOWs were also surveyed when present.

Once a basis for suitability for BUOW is determined, the presence/absence of suitable burrows is to be determined during Step II of the MSHCP Survey Instructions. Step II surveys must be conducted during breeding season (March 1 through August 31). All surveys are to be conducive to observing owls outside their burrows and detecting BUOW signs. Surveys shall not be conducted during rain, high winds (>20mph), dense fog.

As outlined within Step II of the MSHCP Survey Instructions, Step II is separated into two parts, Part A and Part B. Part A includes the detailed focused burrow survey, which consists of systematic survey for suitable burrows to support BUOW. This includes mammal burrows as well as suitable artificial and/or manmade structures. The pedestrian survey transects were spaced approximately 10 to 15 meters apart to allow 100 percent visual coverage of the ground surface. The locations of suitable habitat, potential owl burrows and key signs should be mapped and recorded.

Part B is only conducted if suitable burrows and habitat is present as identified during Part A.

2.0 Methodology

SLS biologist conducted the initial habitat assessment on June 27, 2019 to determine the locations of suitable habitat. Based on this assessment, it was determined the Project site contained suitable habitat, therefore three (3) additional focused BUOW surveys were conducted on July 8, July 25, and August 1, 2019 pursuant to MSHCP Section 6.3.2, MSHCP Protocol Survey Instructions.

2.1 Focused Burrow Survey

Prior to the field survey, available literature and databases including the California Natural Diversity Database (CNDDB), were reviewed to identify sensitive habitats and special status wildlife species, including BUOW in the vicinity of the Study Area. Consistent with the MSHCP Survey Instructions, a focused burrow survey was conducted on June 27, 2019 and pedestrian survey transects were spaced approximately 10 to 15 meters apart to allow 100 percent visual coverage of the ground surface.

According to the MSHCP guidelines, the biologist should also walk the perimeter of the property, which consists of a 150-meter (approximately 500 feet) buffer zone around the Project boundary. If permission to access the buffer area cannot be obtained, the biologist shall not trespass, but visually inspect adjacent habitats with binoculars. Parcels of land that could not be accessed (e.g. private property) were viewed using binoculars from vantage points to survey for BUOW activity or signs thereof, as well as other nesting bird activity.

2.2 Focused Burrowing Owl Survey

If no potential suitable BUOW burrows were observed within the Project Study Area or the 150-meter buffer area then Step II Part B, the focused BUOW surveys, are not required per to the BUOW Survey Instructions.

3.0 Results

Step I Habitat Assessment was conducted on June 27, 2019 to determine suitable Habitat. Based on the Habitat Assessment it was determined the Project site contains suitable habitat. Step II, Part A and B of the MSHCP Survey Instructions took place on July 8, July 25, and August 1, 2019. Each of the survey efforts were conducted in the morning between 7:15 a.m. and 11:50 a.m. and were not performed during periods of excessive or abnormal heat, wind, rain, or other inclement weather. Temperatures during the survey ranged between 64° F and 95° F, with predominant sunny, clear skies and 0-2 mph winds. The survey was conducted during typical BUOW peak activity time and was not conducted during rain, high winds (> 20 miles per hour), or dense fog >75%. Prior to the commencement of the survey, SLS biologist scanned the Study Area using binoculars to look for BUOW. The Study Area was assessed for the suitability to support BUOWs and all suitable burrows were inspected for signs of use by BUOWs. The survey involved walking through suitable habitat within the Study Area (the Project site and a 500-foot buffer). Pedestrian survey transects were spaced approximately 10 to 15 meters apart to allow 100 percent visual coverage of the ground surface (Figure 3).

No BUOWs or evidence of BUOWs were observed on site within the Study Area during the focused survey. A majority of the Project site was characterized by actively maintained ruderal fields, lacking necessary sized burrows and dense vegetation cover to provide suitable nesting habitat for BUOW. Much of the 500-foot buffer is developed. California ground squirrels (*Spermophilus beecheyi*) and their burrows were observed within the Study Area. These burrows were actively utilized by the California Squirrels and contained no BUOW or keys signs (sight, whitewash, burrows, bones, feathers, pellets, nests, and calls). Furthermore, the Project site is annually maintained for fire abatement and the property adjacent to the Project site has active construction and grading activities, including the I-15/Cajalco Interchange. Therefore, based on the lack of suitable BUOW burrows, routine maintenance and mowing, and adjacent construction activity, it is determined that the Project site is not occupied by BUOW.

All wildlife species encountered visually or audibly during the field survey were identified and recorded in field notes. Photographs were taken to document existing conditions within the Study Area; photo-pages are attached (Appendix A).

The animal species or signs thereof observed during the SLS survey are listed below:

Birds:

- American crow (*Corvus brachyrhynchos*)
- Anna's hummingbird (*Calypte anna*)
- black phoebe (*Sayornis nigricans*)
- California quail (*Callipepla californica*)
- California towhee (*Melozone crissalis*)
- house finch (*Haemorhous mexicanus*)
- mourning dove (*Zenaida macroura*)
- red-tailed hawk (*Buteo jamaicensis*)
- song sparrow (*Melospiza melodia*)
- turkey vulture (*Cathartes aura*)
- California Horned Lark (*Eremophila alpestris actia*)
- western scrub jay (*Aphelocoma californica*)

Mammals:

- California ground squirrel (*Spermophilus beecheyi*)
- desert cottontail (*Sylvilagus audubonii*)

Reptiles:

- western fence lizard (*Sceloporus occidentalis*)

4.0 Discussion

While a majority of the Study Area consist of ruderal vegetation, no BUOWs, suitable sized burrows, or key diagnostic signs (i.e., whitewash, pellets, bones, feathers, etc.) of BUOWs were observed within the Study Area. California ground squirrels and their burrows were observed within the Study Area. However, these burrows are actively utilized by California ground squirrels and contained no BUOWs or key diagnostic signs (i.e., whitewash, pellets, bones, feathers, etc.) of BUOWs. Furthermore, the Project site is annually maintained for fire abatement and the property adjacent to the Project site has active construction and grading activities associated with the I-15/Cajalco Interchange. Therefore, based on the lack of suitable BUOW burrows, routine maintenance and mowing, lack of proper vegetation cover, and adjacent construction activities, it is determined the Project site is not occupied by BUOW.

Based on the results of the field survey, the Study Area is not considered to be occupied by BUOWs. However, since the BUOW is a migratory species the Project will be required to conduct

a 30-day pre-construction survey for the BUOW. The following shall take the following measure to avoid impacts to BUOW.

- Pre-construction surveys for BUOW within the survey area where suitable habitat is present shall be conducted by a qualified biologist within 30 days prior to the commencement of ground disturbing activities. If active BUOW burrows are detected during the breeding season, all work within 300 feet of any active burrow will be halted until that nesting effort is finished. The on-site biologist will review and verify compliance with these boundaries and will verify the nesting effort has finished. Work can resume when no other active BUOW burrows nests are found.

  If active BUOW burrows are detected outside the breeding season or during the breeding season and its determined nesting activities have not begun, then passive and/or active relocation may be approved following consultation with the City. The installation of one-way doors may be installed as part of a passive relocation program. BUOW burrows shall be excavated with hand tools by a qualified biologist when determined to be unoccupied, and back filled to ensure that animals do not re-enter the holes/dens. Upon completion of the survey and any follow-up construction avoidance management, a report shall be prepared and submitted to the City for mitigation monitoring compliance record keeping.

5.0 Certification

I hereby certify that the statements furnished above and in the attached exhibits present data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Signed:  Dated: 08/09/2019

6.0 Literature Cited

California Burrowing Owl Consortium (CBOC). Burrowing Owl Survey Protocol and Mitigation Guidelines. 1993.

CDFW (California Department of Fish and Wildlife). 2019. Life History Accounts and Range Maps – California Wildlife Habitat Relationship System. Retrieved from: http://www.dfg.ca.gov/biogeodata/cwhr/cawildlife.aspx.

CDFW (California Department of Fish and Wildlife). 2019. RareFind, California Department of Fish and Game, California Natural Diversity Database (CNDDB). State of California, The Natural Resources Agency, Department of Fish and Game, Biogeographic Data Branch, California Natural Diversity Database, Sacramento, CA.

CDFW (California Department of Fish and Wildlife), Natural Diversity Database. 2019. Special Animals List. Periodic publication. 67 pp.

National Geographic Society. 2011. Field Guide to the Birds of North America, 6th Ed. National Geographic Society, Washington, D.C.

Riverside, County of. June 2003. Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). Prepared by Dudek.

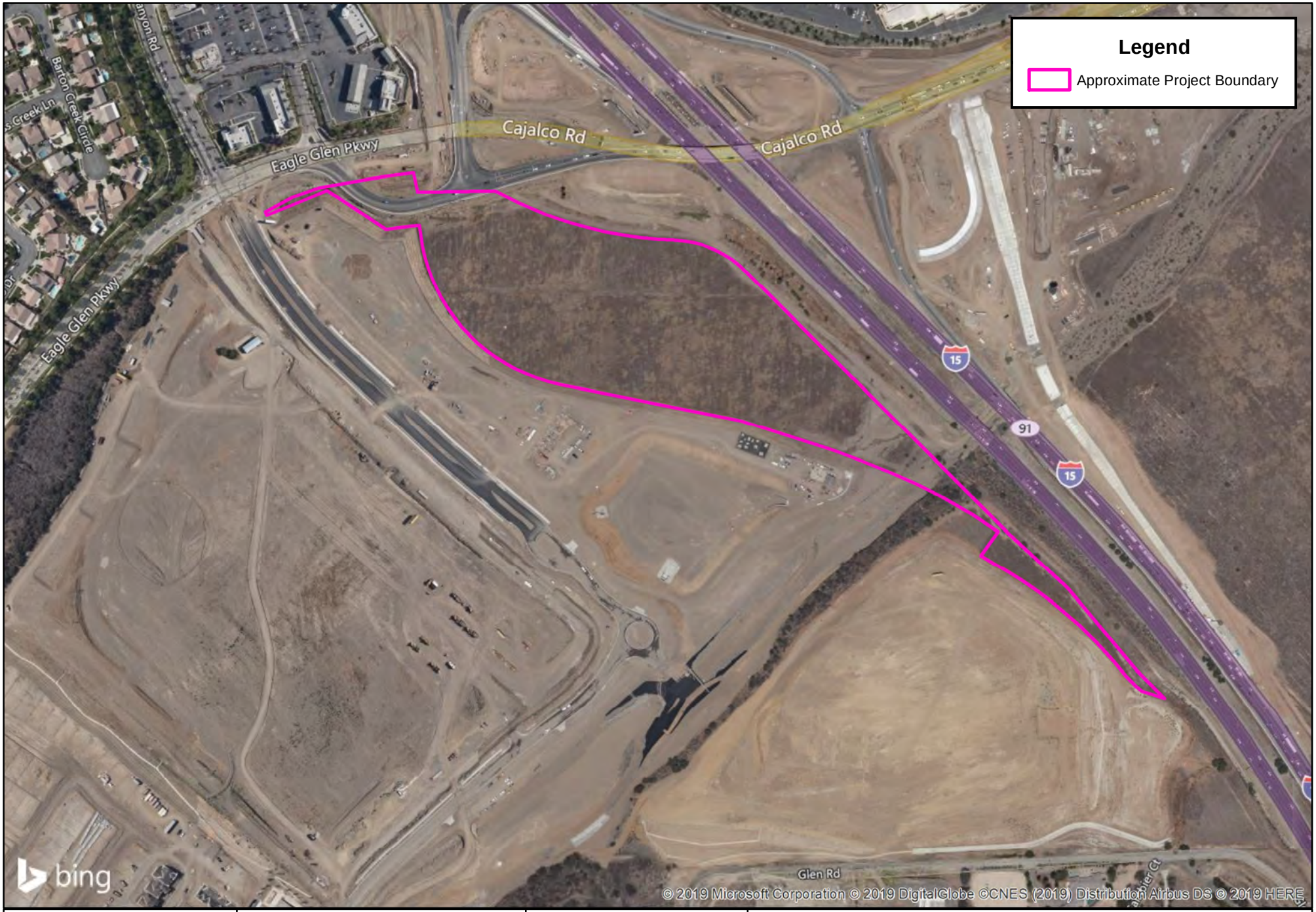
Riverside, County of. 2006. Burrowing Owl Survey Instructions for the Western Riverside Multiple Species Habitat Conservation Plan Area.

Figures



GIS Prepared By: Carlson SLS Created: August 2, 2019	0 1,250 2,500 5,000 Feet 1 inch = 5,000 feet	Data Sources: Bing Maps	***Guardian Capital: Bedford Marketplace*** Regional Map

FIGURE 1



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

0 100 200 400 600 800 Feet

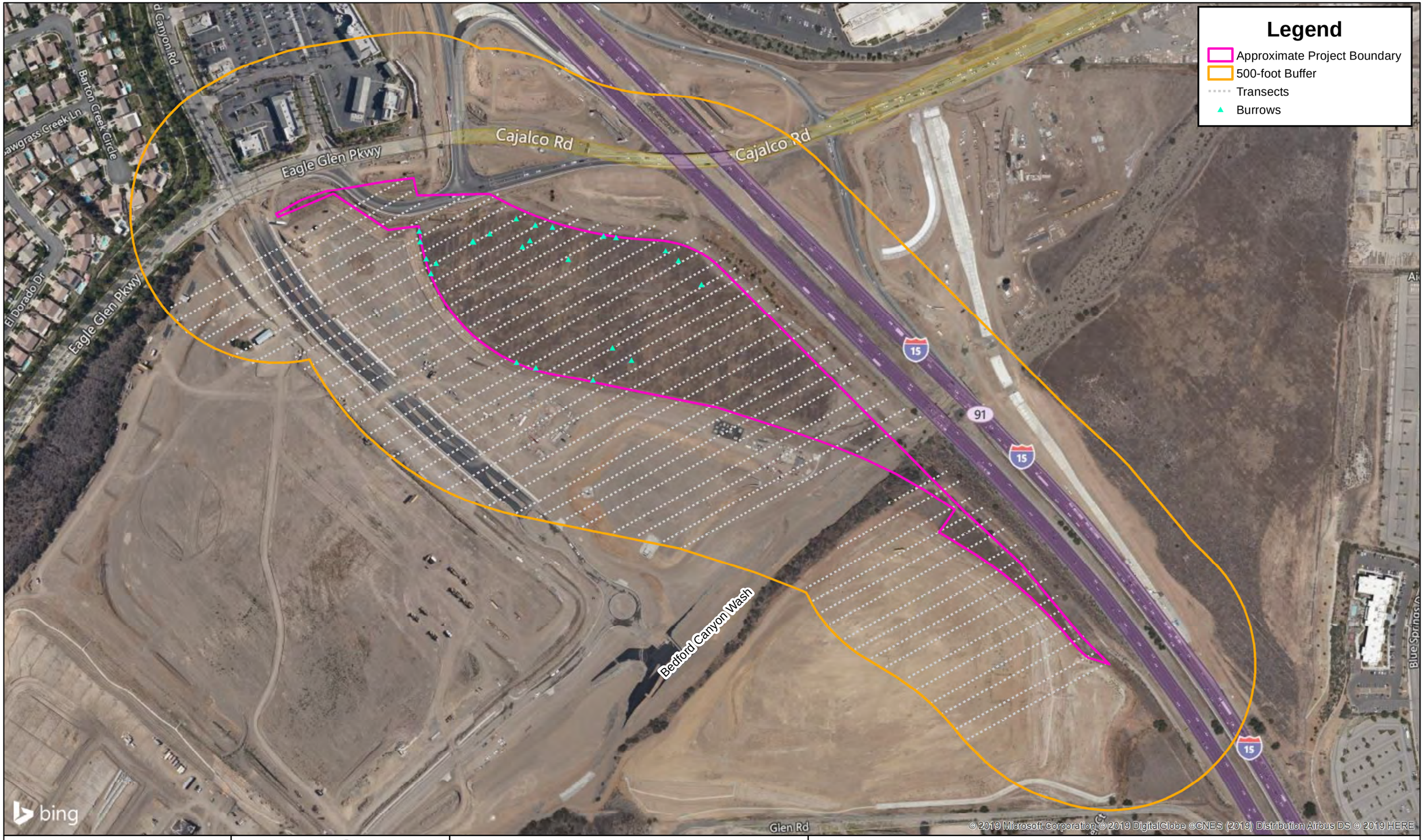
1 inch = 400 feet

Data Source: Bing Maps

Guardian Capital: Bedford Marketplace

Vicinity Map

FIGURE 2



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

0 75 150 300 450 600 Feet
1 inch = 300 feet

Data Source: Bings Map
Field Visit (06/27/19)
Field Visit (07/08/19)
Field Visit (07/25/19)
Field Visit (08/01/19)

Guardian Capital: Bedford Marketplace

Transect and Burrow Map

FIGURE 3

APPENDIX A

Representative Photographs



Looking north-east over the Project site containing ruderal vegetation.



Looking south at the Project site containing ruderal vegetation.



Looking east at the Project site within the ruderal vegetation.



Looking north-west at the Project site within the ruderal vegetation.



Typical size of Burrow observed onsite actively utilized by the California Squirrel.



Looking south-east at the disturbed areas within the Study Area.



Looking south at the disturbed areas within the Study Area.



Looking south-west within the surrounding 500-foot buffer.

APPENDIX B

Representative Photographs of Community Classifications



GIS Prepared By:
Carlson SLS

Created: July 3, 2019

0 50 100 200 300 400 Feet
1 inch = 200 feet

Data Source: Bings Map (2016)

Guardian Companies

Photograph Index Sheet



Photostation 1.



Photostation 2.



Photostation 3.



Photostation 4.



Photostation 5.



Photostation 6.



Photostation 7.



Photostation 8.



Photostation 9.



Photostation 10.



Photostation 11.



Photostation 12.

APPENDIX C

Special Status Plant Species Potential Occurrence Determination

APPENDIX D

Plant Species Recorded During the Field Surveys

APPENDIX E

Special Status Wildlife Species Potential Occurrence Determination

APPENDIX C-2:

MSHCP Consistency Analysis

This Page Intentionally Left Blank

CONSISTENCY DETERMINATION

BEDFORD MARKETPLACE PROJECT



Submitted Pursuant to MSHCP
Section 6.1.2 *Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools;*
Section 6.3.2 *Species Survey Requirements*

Submitted to:
City of Corona
400 South Vicentia Avenue
Corona, CA 92882

Prepared for:
Guardian Capital
5780 Fleet Street, Suite 225
Carlsbad, California 92008

Prepared by:
Carlson Strategic Land Solutions
27134A Paseo Espada, Suite 323
San Juan Capistrano, CA 92675
Tel: (949) 542-7042

October 2019

Table of Contents

Section 1. Introduction 1
1.1 Project Terms 1
1.2 Definition of Project Area 1
Section 2. Project Background 3
Section 3. Project Description 4
Section 4. Methodology 6
4.1 Section 6.1.2 Riparian/Riverine Areas and Vernal Pools 7
4.2 Section 6.1.3 Narrow Endemic Plants 8
4.3 Section 6.3.1 Special Survey Requirements 9
4.3.1 General Biological Surveys 9
4.3.2 Burrowing Owl Surveys 10
4.3.3 Wildlife Movement Analysis 12
Section 5. Existing Conditions 13
5.1 Existing Conditions and Land Use 13
5.2 Vegetation Communities 13
5.3 MSHCP Riparian/Riverine and Vernal Pool Assessment 15
Section 6. Results and Impact Analysis 17
6.1 Vegetation Communities 17
6.1.1 Alternative 1: Off-site Dirt Import 17
6.1.2 Alternative 2:PA 14 Dirt Import 18
6.2 Section 6.1.2 - Riparian/Riverine Areas and their Associated Species 20
6.2.1 Impacts to Species Protected under Section 6.1.2 21
6.2.2 Vernal Pools 22
6.3 Section 6.1.2 - Riparian/Riverine Areas and their Associated Species 22
6.4 Section 6.3.2 -- Species Survey Requirements 22
Section 7. Description of Avoidance and Mitigation Measures 23
7.1 Section 6.1.2 Riparian/Riverine Areas and their Associated Species 23
7.1.1 Avoidance and Minimization – Riparian/Riverine Areas 23
7.1.2 Mitigation – Riparian/Riverine Areas 23
7.2 Section 6.1.3 Narrow Endemic Plant Species 24
7.2.1 Avoidance and Minimization - Narrow Endemic Plant Species 24
7.2.2 Mitigation - Narrow Endemic Plant Species 24
7.3 Section 6.3.2 -- Species Survey Requirements 24
7.3.1 Avoidance and Minimization – Burrowing Owl 24
7.3.2 Mitigation – Burrowing Owl 25
Section 8. Consistency Analysis 26
8.1 Section 6.1.2 - Riparian/Riverine Areas and their Associated Species 26

8.2 Section 6.1.3 – Protection of Narrow Endemic Plant Species 26
8.3 Section 6.3.2 - Species Survey Requirements..... 26
Section 9. List of Preparers 28
Section 10. References.....29

Tables

Table 1. Summary of Vegetation Communities Onsite 14
Table 2. Riparian/Riverine Habitat Onsite 16
Table 3. Total Project Impacts with Alternative 1: Off-site Dirt Import – Onsite Vegetation Community Impacts 17
Table 4. Total Project Impacts with Alternative 2: PA 14 Dirt Import - Vegetation Community Impacts 18

Figures

Figure 1: Regional Map
Figure 2: Project Vicinity Map
Figure 3: MSHCP Overlays
Figure 4: Vegetation Map
Figure 5: MSHCP Riparian/Riverine Features
Figure 6: Alternative 1: Off-site Dirt Import - Riparian/Riverine Habitat Impacts
Figure 7: Alternative 2: PA 14 Dirt Import - Riparian/Riverine Habitat Impacts

Appendices

A. Biological Technical Report for Bedford Marketplace (October 2019)

Executive Summary

Bedford Marketplace, LLC proposes to amend the Arantine Hills Specific Plan (AHSP Amendment No. 3) to increase the boundary of the AHSP by approximately 18 acres (Project Site). The proposal would also increase the area designed Commercial in the AHSP to approximately 22 acres and increase the amount of commercial use from 80,000 square feet to approximately 134,378 square feet plus a 135-room hotel. The Project site, currently owned by the Riverside County Transportation Commission (RCTC), would increase the size of the planned commercial center within the Arantine Hills Specific Plan.

Project implementation includes two alternatives for construction and the importing of dirt for grading operations.

Import Alternative 1: The first option to import dirt onsite is by truck from an off-site source. A potential source of import (Borrow Site) has been identified from the FST Sand and Gravel Mine, located east of I-15 and approximately ½ mile east of El Cerrito Road. The dirt would be hauled from the Borrow Site to the Project site.

Import Alternative 2: The second option to import dirt to onsite involves importing dirt from Planning Area 14 (PA 14) within the Arantine Hills Specific Plan (AHSP). PA 14, approximately 26 acres, is located south of Bedford Canyon Wash and forms an elevated plateau above Bedford Canyon Wash.

To import dirt from PA 14, an access ramp would be graded in the northeast portion of PA 14 leading down to the existing concrete crossing of Bedford Canyon Wash. Grading the access ramp would require creating a notch in the existing bluff with side slopes. The lower portion of the access ramp would be steeper and reinforced with geo-grid or similar stabilizer. Fill, ranging from 5 feet to 10 feet would be temporarily placed on top of the existing concrete pad crossing Bedford Canyon Wash to both protect the concrete pad and function as a ramp to gain elevation.

Careful grading operations and BMPs would avoid dirt spoils in Bedford Wash. While this import operation would need to take place during the dry season, temporary pipe culverts would be placed on top of the concrete pad under the dirt ramp in case unexpected monsoonal storms caused Bedford Canyon Wash to flow.

Following completion of the import, the temporary dirt bridge and culverts would be removed from the concrete pad crossing Bedford Canyon Wash and the notch in the bluff for the access ramp would be reconstructed at 2:1 slopes and surface terrace drains

would be added to control storm runoff to minimize erosion. The graded slopes would be replanted with a native coastal sage scrub mix.

The Project site is located in the Bedford Canyon area of the Santa Ana Mountain foothills in the southeastern portion of the City of Corona. The Project is located within the Temescal Canyon Area Plan of the Riverside County Multiple Species Habitat Conservation Plan (MSHCP); however, the Project site is not located within any MSHCP Criteria Areas, Cell Groups, or Subunits. Portions of the Project site are located within overlay areas, as follows:

- Riparian and Riverine Areas (Section 6.1.2)
- Narrow Endemic Plants – Survey Area Number 7 (Section 6.1.3)
- Western burrowing owl (*Athene cunicularia hypugaea*) (Section 6.3.2)

Thus, this consistency determination has been prepared pursuant to those sections.

The majority of the Project site (approximately 98 percent) consists of ruderal vegetation and disturbed/developed land. The remainder of the Project site (approximately 2 percent) consisting of Riversidian sage scrub and widened and restored Bedford Canyon Wash.

The Project site is not located within or adjacent to any MSHCP Conservation Area. The area does not support the Section 6.1.2 special status species. Thus, no mitigation is proposed for the Section 6.1.2 special status species.

The site was evaluated for Narrow Endemic Plants and suitable for the species identified within Survey Area Number 7 pursuant to Section 6.1.3. No species identified within Survey Area Number 7 were observed during the field survey. Furthermore, the Project site lacks suitable habitat and suitable soils and habitat. Therefore, no mitigation is necessary.

The site was evaluated for suitable burrowing owl habitat pursuant to Section 6.3.2, Species Survey Requirements. Following a habitat assessment and three (3) additional focused burrowing owl surveys, no burrowing owls or diagnostic signs of burrowing owls were observed. However, the site was deemed to have potential habitat for the burrowing owl, therefore pre-construction surveys will be conducted by a qualified biologist 30 days prior to the commencement of any ground disturbing activities. With implementation of the pre-construction surveys, the Project would be consistent with the MSHCP requirements as outlined within Section 6.3.2.

Section 1. Introduction

The following Consistency Determination has been prepared by Carlson Strategic Land Solutions (SLS), on behalf of Bedford Marketplace, LLC (Applicant) pursuant to Section 6.1.2 *Protection of Species Associated with Riparian/Riverine areas and Vernal Pools,* Section 6.3.1 *Narrow Endemic Plants,* and Section 6.3.2 *Species Survey Requirements* of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). The purpose of the Consistency Determination is to determine if implementation of the Project is consistent with the requirements of the MSHCP.

The Applicant proposes to amend the Arantine Hills Specific Plan (AHSP Amendment No. 3) to increase the boundary of the AHSP by approximately 18 acres (Project Site). The proposal would also increase the area designed Commercial in the AHSP to approximately 22 acres and increase the amount of commercial use from 80,000 square feet to approximately 134,378 square feet plus a 135-room hotel. The Project site assessor parcel number's (APN) are 308-040-053 and 308-040-054.

1.1 Project Terms

The following terms will be used throughout this document and are defined as follows:

- Project site: the approximately 18-acre Bedford Marketplace Project site.
- Study Area: the area evaluated during the field survey, including the approximately 18-acre Project site and the surrounding 500-feet area.
- Project Vicinity: intended to be a general term to describe the broader area surrounding the Study Area.

1.2 Definition of Project Area

The proposed Project site encompasses approximately 18 acres and is located in the Bedford Canyon area of the Santa Ana Mountain foothills in the southeastern portion of the City of Corona. The City of Corona is generally situated southwest of the City of Riverside, south of the City of Norco, and north of the City of Lake Elsinore in Riverside County, California (Figure 1). The Project site is found within Section 20 of Township 4 South, Range 6 West, of the Corona South USGS 7.5" Quadrangle Map. Areas surrounding the Project Site include the Arantine Hills Specific Plan to the south and west; I-15/Cajalco Interchange construction to the north; and the I-15 to the east. The Study Area, consisting of the approximately 18-acre Project site and surrounding 500-foot buffer, and includes

elevations that range from 1,100 to 1,200 feet above mean sea level (MSL) (Figure 2). The buffer area was evaluated as a precautionary measure for potential off-site impacts.

The Project site is located within the Temescal Canyon Area Plan of the MSHCP. The Project is not located within any MSHCP Criteria Areas, Cell Groups, or Subunits. Portions of the Survey Area is located within MSHCP Section 6.1.2 Riparian and Riverine Areas, Section 6.1.3 Narrow Endemic Plant Species Survey Area (NEPSSA) Number 7, and Section 6.3.2 Species Survey Requirements for the western burrowing owl (*Athene cunicularia hypugaea* [BUOW]) habitat (Figure 3). The Project is not located within MSHCP survey areas for Criteria Area Plant Species, Amphibians, Mammals, or Special Linkage Areas.

Bedford Canyon Wash, located to the south of the Project Site, is an ephemeral wash with a sandy bottom and sparsely vegetated alluvial fan sage scrub and non-native vegetation. The Wash receives flows from the Santa Ana mountains, through the Eagle Glen Golf Club, through the AHSP area, continuing downstream to Temescal Creek and ultimately the Santa Ana River. As part of implementation of the AHSP, Bedford Wash has been widened and improved with buried rip-rap along the banks and buried grade control structures to control erosion and scour. Two concrete crossings (upstream and downstream) provide access to the south side of the Wash and the associated maintenance access road. Restoration of Bedford Wash will include planting with an alluvial fan sage scrub seed mix.

Section 2. Project Background

Upstream of the Project site is the Arantine Hills Specific Plan Project (Arantine Hills Project). Arantine Hills Project was approved by the City of Corona in 2012 and received Resource Agency approval in 2016 to widen and restore Bedford Canyon Wash creating 23.87 acres of alluvial fan sage scrub habitat permanently protected in a Conservation Easement. As part of implementation of the AHSP, Bedford Wash has been widened and improved with buried rip-rap along the banks and buried grade control structures to control erosion and scour. Two concrete crossings (upstream and downstream) provide access to the south side of the Wash and the associated maintenance access road.

The approved regulatory permits for the Arantine Hills Project include the following:

CDFW Streambed Alteration Agreement

- Final Streambed Alteration Agreement Notification No. 1600-2015-0055-R6 Arantine Hills Development Project - Issued July 25, 2016
- Amendment Letter 1 Notification No. 1600-2015-0055-R6 - Issued April 1, 2017
- Amendment 2 Notification No. 1600-2015-0055-R6 - Issued December 21, 2017

Corps Section 404 Nationwide Permit

- Corps File No. SPL-2015-00361-ERS – Originally issued September 20, 2016, a Reverification letter was issued November 29, 2017

RWQCB Section 401 Water Quality Certificate

- SARWQCB Project NO. 332014-24 – Issued July 7, 2016

US Fish and Wildlife Service Streamline Section 7

- FWS-WRIV-15B0271-16F0852 - Issued August 12, 2016

DBESP and MSHCP Consistency Determination

- FWS/CDFW-15BO0271-15CPA0281 – Approval via email June 23, 2016 and incorporated into the Streamline Section 7.

Section 3. Project Description

The intent of the Project is to incorporate the approximate 18 acres into the existing Arantine Hills Specific Plan (AHSP) and build a new commercial center. The Project site, currently owned by the Riverside County Transportation Commission (RCTC), would increase the size of the planned commercial center within the Arantine Hills Specific Plan, and is referred to as Bedford Marketplace Project (Project).

The Applicant proposes to amend the Arantine Hills Specific Plan (AHSP Amendment No. 3) to increase the boundary of the AHSP by approximately 18 acres (Project Site). The proposal would also increase the area designated Commercial in the AHSP to approximately 22 acres and increase the amount of commercial use from 80,000 square feet to approximately 134,378 square feet plus a 135-room hotel.

Project implementation includes two alternatives for construction and the importing of dirt for grading operations.

Import Alternative 1: The first option to import dirt onsite is by truck from an off-site source. A potential source of import (Borrow Site) has been identified from the FST Sand and Gravel Mine, located east of I-15 and approximately ½ mile east of El Cerrito Road. The dirt would be hauled from the Borrow Site to the Project site.

Import Alternative 2: The second option to import dirt to onsite involves importing dirt from Planning Area 14 (PA 14) within the Arantine Hills Specific Plan (AHSP). PA 14, approximately 26 acres, is located south of Bedford Canyon Wash and forms an elevated plateau above Bedford Canyon Wash.

To import dirt from PA 14, an access ramp would be graded in the northeast portion of PA 14 leading down to the existing concrete crossing of Bedford Canyon Wash. Grading the access ramp would require creating a notch in the existing bluff with side slopes. The lower portion of the access ramp would be steeper and reinforced with geo-grid or similar stabilizer. Fill, ranging from 5 feet to 10 feet would be temporarily placed on top of the existing concrete pad crossing Bedford Canyon Wash to both protect the concrete pad and function as a ramp to gain elevation.

Careful grading operations and BMPs would avoid dirt spoils in Bedford Wash. While this import operation would need to take place during the dry season, temporary pipe culverts would be placed on top of the concrete pad under the dirt ramp in case unexpected monsoonal storms caused Bedford Canyon Wash to flow.

Following completion of the import, the temporary dirt bridge and culverts would be removed from the concrete pad crossing Bedford Canyon Wash and the notch in the bluff for the access ramp would be reconstructed at 2:1 slopes and surface terrace drains would be added to control storm runoff to minimize erosion. The graded slopes would be replanted with a native coastal sage scrub mix.

Access to the Project site is from the residential project referred to as Bedford, located to the west of the Project site, off Eagle Glen Parkway via Hudson House Drive. Directions to the Project site from Interstate 15 (I-15) is to exit Cajalco Road and head west onto Eagle Glen Parkway. Access is obtained via Hudson House Drive.

Section 4. Methodology

The Study Area is located within the planning area for the Western Riverside County MSHCP (Temescal Canyon Area Plan), but is not located within any Criteria Cells, Cell Groups, or Subunits. Portions of the Study Area is located within the Narrow Endemic Plants Survey Area Number 7 and survey area for the burrowing owl (*Athene cunicularia* [BUOW]) (Figure 3).

Biologist and Regulatory Specialist from SLS conducted site-specific surveys at the Study Area from June through August 2019. SLS conducted biological surveys in three main components in order to identify and evaluate actual or potential impacts to biological resources associated with the proposed Project, including: (1) vegetation mapping; (2) site-specific biological surveys to evaluate the presence/absence of special-status species (or potentially suitable habitat) to the satisfaction of the MSHCP, CEQA, and Federal and State regulations; and (3) delineation of aquatic resources (including wetlands/riparian habitat) subject to the jurisdiction of the Corps, RWQCB, and CDFW. The jurisdictional delineation was conducted to determine the limits of Corps jurisdiction pursuant to Section 404 of the CWA, and CDFW jurisdiction pursuant to Division 2, Chapter 6, Section 1600 of the California Fish and Game Code.

The field studies focused on a number of primary objectives that would satisfy the special provisions of the MSHCP and also comply with CEQA requirements, including: (1) general reconnaissance surveys and vegetation mapping; (2) general wildlife surveys; (3) habitat assessments and surveys for special-status plants; (4) habitat assessments and focused biological surveys for special-status animals (including species designated by MSHCP survey areas); (5) wildlife movement analysis; (6) assessments of riparian/riverine areas and vernal pool habitats; and (7) delineation of areas subject to the jurisdiction of the Corps, RWQCB, and CDFW. Observations of plant and wildlife species were recorded during each of the above-mentioned survey efforts. The attached Biological Report provides results of the surveys and personnel (Appendix A).

The Biological Technical Report for Bedford Marketplace Project dated October 2019 (Biological Report) evaluates individual plants and animal species based on their special-status. For the purpose of the Biological Report, plants were considered special-status based on one or more of the following criteria:

- Listing through the Federal and/or State Endangered Species Act (ESA);
- Taxa designated a species of special concern by CDFW.
- Taxa designated a state fully protected species by CDFW.
- Taxa identified as sensitive, unique or rare, by the USFWS, CDFW, the United States Forest Service (USFS), the United States Bureau of Land Management (BLM), and/or the California Department of Forestry and Fire Protection (CDF).

- Plants that meet the definition of rare or endangered under CEQA §15380(b) and (d). Species that may meet the definition of rare or endangered include the following:
    - Species considered by CNPS and CDFW to be "rare, threatened or endangered in California" (California Rare Plant Rank [CRPR] 1A, 1B and 2) (CNPS 2019). A majority of the CRPR 3 and CRPR 4 plant species generally do not qualify for protection under CESA and NPPA.
    - Species that may warrant consideration on the basis of local significance or recent biological information.
    - Some species included on the CNDDB Special Plants, Bryophytes, and Lichens List (CDFW 2019g).
- Considered a locally significant species, that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA §15125 (c)) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include a species at the outer limits of its known range or a species occurring on an uncommon soil type.
- Evaluation and coverage under the MSHCP.

Prior to conducting fieldwork, pertinent literature on the flora of the region was examined. A thorough archival review was conducted using available literature and other historical records. These resources included, but were not limited to, the following: CNPS Inventory of Rare and Endangered Plants of California [CNPS 2019]; CNDDB for the Corona South, and surrounding USGS quadrangle maps (CNDDB 2019); and MSHCP Document, including *Section 6.1.2, Section 6.1.3, Section 6.3*, and Table 9.3 (Riverside County Integrated Project 2003).

Vegetation communities were mapped based on the Holland Classification System (Holland 1986). Where necessary, deviations were made on best professional judgment when areas did not fit into a specific habitat description provided by Holland. Plant communities were mapped in the field directly onto a 200-scale (1" = 200') aerial photograph and a Trimble R1 GNSS Receiver paired with the ARCGIS Collector Application was utilized during the survey. Figure 4 (Vegetation Map) provides vegetation mapping for the Project site.

4.1 Section 6.1.2 Riparian/Riverine Areas and Vernal Pools

Volume I, Section 6.1.2 of the MSHCP describes the process through which protection of riparian/riverine areas and vernal pools would occur within the MSHCP Plan Area. The purpose is to ensure that the biological functions and values of these areas throughout the MSHCP Conservation Area are maintained. The MSHCP requires that as projects are

proposed within the overall Plan Area, the effect of those projects on riparian/riverine areas and vernal pools must be addressed. The Study Area was evaluated for the presence/absence of MSHCP riparian/riverine areas and vernal pools. With respect to riparian habitat, the Study Area was evaluated for the potential habitat to support the special status species including the least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii traillii*), the western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), listed fairy shrimp, and other species identified in Section 6.1.2 of the MSHCP.

The Project site was evaluated to determine the limits of (1) Corps jurisdiction pursuant to Section 404 of the CWA; (2) CDFW jurisdiction pursuant to Division 2, Chapter 6, Section 1600 of the Fish and Game Code; and (3) MSHCP riparian/riverine areas and vernal pools. Suspected jurisdictional areas were field checked for the presence of definable channels and/or wetland vegetation, soils and hydrology. Suspected wetland habitat on the site were evaluated using the methodology set forth in the Corps' 1987 Wetland Delineation Manual (Wetland Manual) and the 2008 Regional Supplement to the Corps Wetland Delineation Manual: Arid West Region Version 2.0 (Arid West Supplement). While in the field, the limits of Corps and CDFW jurisdiction were recorded onto a 200-scale (1" = 200') color aerial photograph and a Trimble R1 GNSS Receiver paired with the ARCGIS Collector Application, with accuracy to +/- one foot. Enclosed is a delineation graphic (Figure 5), which depicts the areas of Corps and CDFW jurisdiction identified within the Study Area.

4.2 Section 6.1.3 Narrow Endemic Plants

The CNDDB and MSHCP were initially consulted to determine known occurrences of special- status plants in the region. Based on this information, a list of target plants (including their suitable habitats and soil) was developed and incorporated into a survey program to achieve the following goals: (1) characterize the vegetation associations and land use; (2) prepare a detailed floral compendium; and (3) document the distribution and abundance of any special-status plant species within the Project Study Area.

General surveys were conducted to identify potential sensitive plant habitats, and to establish the accuracy of the data identified from the literature review. An aerial photograph and topographic map were used to determine the community types and other physical features that may support sensitive species or communities within the Project Study Area. The reconnaissance surveys also considered the guidelines adopted by CNPS and CDFW (Nelson 1984, CNPS 2001).

Where potentially suitable habitat was present, focused plant surveys included those MSCHP Covered Species identified by the NEPSSA Survey Area Number 7. For locations with positive survey results, the MSHCP requires that 90 percent of those portions of the property that provide for long-term conservation value for the identified species shall be avoided until it is demonstrated that conservation goals for the particular species are met. Findings of equivalency shall be made demonstrating that the 90-percent standard has been met.

All plant species encountered during the field surveys were identified and recorded following the guidelines adopted by CNPS (2001) and CDFW by Nelson (1984). A complete list of the species observed is provided in Appendix D of the Biological Technical Report for Bedford Marketplace Project dated October 2019.

4.3 Section 6.3.1 Special Survey Requirements

The CNDDB and MSHCP were initially consulted to determine known occurrences of special- status animals in the region. Based on this information, a list of target animal species (including their suitable habitats) was developed and incorporated into a survey program to achieve the following goals: (1) prepare a detailed faunal compendium; and (2) implement general reconnaissance field work and focused surveys to document the distribution and quantity of any special-status animal species within the Study Area.

The Project site and surrounding 500-feet was evaluated for suitable burrowing owl habitat, and where present, focused surveys were conducted for the BUOW to satisfy the requirements of the MSHCP.

4.3.1 General Biological Surveys

Wildlife species were evaluated and detected during field surveys by sight, call, tracks, and scat. Site surveys were conducted in such a manner as to allow inspection by direct observation, including the use of binoculars. Observations of physical evidence and direct sightings of wildlife were recorded in field notes during each visit. A complete list of wildlife species observed within the Project site is provided in the Biological Report. Scientific nomenclature and common names for vertebrate species referred to in this report follow the Complete List of Amphibian, Reptile, Bird, and Mammal Species in California, Standard Common and Scientific Names for North American Amphibians, Turtles, Reptiles, and Crocodilians 6th Edition, Collins and Taggert (2009) for amphibians and reptiles, and the AOU Checklist (2018) for birds. The methodology (including any applicable survey protocols) utilized to conduct the focused surveys or the habitat assessments for special-status animals is included below.

Reptiles and Amphibians

During general surveys, reptiles and amphibians were identified incidentally during surveys within each habitat type. Habitats were examined for diagnostic reptile sign, which include shed skins, scat, tracks, snake prints, and lizard tail drag marks. All reptiles and amphibian species observed, as well as diagnostic sign, were recorded in field notes.

Birds

During general surveys, birds were identified incidentally during surveys within each habitat type. Birds were detected by both direct observation and by vocalizations and were recorded in field notes. The majority of the Project site consists of lowlands containing ruderal (former agricultural) areas and other disturbed areas that provide suitable foraging habitat for raptors, including a few special-status species. These areas serve as potential foraging habitat for a variety of raptor species. During general and focused biological surveys, raptor use within the Study Area was documented to identify species using the property for foraging habitat, as well as to identify any locations of nesting raptors.

Mammals

During general surveys, mammals were identified incidentally during surveys within each habitat type. Mammals were detected both by direct observations and by the presence of diagnostic sign (i.e., tracks, burrows, scat, etc.).

Botanical Resources

During general surveys, botanical resources were identified during survey within each habitat type. Botanical resource surveys consisted of five components: (1) a literature search; (2) preparation of a list of target special-status plant species and sensitive vegetation communities that could occur on site; (3) general field reconnaissance survey; (4) vegetation mapping based on the Holland Classification System; and (5) preparation of a vegetation map, including the location of any sensitive vegetation communities found on site.

4.3.2 Burrowing Owl Surveys

The entire Project site is located within the MSHCP Survey Area for the burrowing owl (*Athene cunicularia* [BUOW]). The BUOW is designated as a State Species of Special Concern. The BUOW occurs in short grass prairies, grasslands, lowland scrub, former agricultural lands (particularly rangelands), prairies, coastal dunes, desert floors, and some artificial, open areas as a year-long resident (Haug, et al.1993). They require large open expanses of sparsely vegetated areas on gently rolling or level terrain with an

abundance of active small mammal burrows (e.g., ground squirrels, rabbits, etc.). They require the use of rodent or other burrows for roosting and nesting cover. They may also dig their own burrow in soft, crumbly soil and may also use pipes, culverts, and nest boxes where burrows are scarce. In the case of nesting owls, one burrow is typically selected for use as the nest; however, satellite burrows are usually found within the immediate vicinity of the nest burrow, within the defended territory of the owl.

Pursuant to the MSHCP, if a site occurs within the BUOW survey area, and suitable habitat is present, then focused burrow and BUOW surveys are to be conducted following the 2012 MSHCP Burrowing Owl Survey Instructions. The Project site was evaluated for suitable BUOW habitat.

Focused Survey Requirements

The Burrowing Owl Survey Instructions are divided into two steps, including the habitat assessment (Step 1) and locating burrows and BUOWs (Step II). Step I of the MSHCP Survey Instructions requires that an assessment be conducted to determine the presence of suitable habitat for the BUOW. A Habitat Assessment was conducted on June 27, 2019 to determine any suitable BUOW habitat on the Project site and surrounding 500-foot buffer. The MSHCP Survey Instructions acknowledge that the presence of suitable burrows is not the deciding factor on whether a site contains suitable habitat for BUOWs. The presence/absence of suitable burrows is to be determined during Step II of the Survey Instructions (Part A: Focused Burrow Survey, and Part B: Additional Focused Burrowing Owl Surveys), once it has been determined that a site contains suitable habitat for the BUOW. The Study Area contains former agricultural lands, ruderal vegetation areas, and unvegetated disturbed areas, many of which exhibit some basic suitability for BUOWs. As such, a focused burrow survey (Step II Part A) was required for the Project.

Following the assessment, a three additional focused BUOW surveys were conducted on July 8, 25, and August 1, 2019 between 7:15 a.m. and 11:50 a.m. pursuant to MSHCP Section 6.3.2, MSHCP Protocol Survey Instructions, and the methods used to detect and identify BUOW included observation of key signs identified by the California Burrowing Owl Consortium (CBOC).

The 2019 focused BUOW surveys were conducted within suitable habitat of the Project site and surrounding 500-foot buffer. The surveys were conducted by walking pedestrian transects within areas of suitable habitat in order to map suitable burrows. The transects were spaced 10 to 15 meters apart, in order to

effectively cover 100 percent of the ground surface. If suitable burrows were encountered, the burrows were mapped using a Trimble R1 GNSS Receiver paired with the ARC Geographical Information System (ARCGIS) Collector Application. Any encountered burrows were inspected for the presence of diagnostic owl sign, including "whitewash" (owl excrement), regurgitated pellets, bones, feathers, etc.

4.3.3 Wildlife Movement Analysis

In order to evaluate direct, indirect, and cumulative impacts of the proposed Project on wildlife movement, an analysis of wildlife use/movement was conducted for the Project site and adjacent buffer area. The analysis considered the movement and use of large mammals (i.e., mountain lion and mule deer), medium-sized mammals (mesocarnivores), and other wildlife such as small mammals, birds, reptiles, and amphibians. Methods utilized for the wildlife analysis included a review of existing information on wildlife use (including the MSHCP), general and focused biological surveys to document the presence/absence of wildlife, and opportunistic observations of mammal tracks and scat. The analysis considered the Project site, but with particular focus on Bedford Canyon Wash.

A portion of the Project site contains the Bedford Canyon Wash, which within the MSHCP has not been identified as an important regional wildlife corridor connecting the Santa Ana Mountains to other MSHCP Core Areas. Bedford Canyon Wash continues through the Project site, where it has been widened and restored. Further downstream (under Interstate 15), a portion of Bedford Canyon Wash has been lined with concrete bed, bank, and channel, before it connects to Temescal Creek. The portion of Bedford Canyon Wash that has been lined with concrete bed, bank, and channel, provides limited wildlife movement to Temescal Creek. The Project site would preserve the widened and restored Bedford Canyon Wash, consistent with the restoration occurring through the Arantine Hills project site, which would maintain existing wildlife movement opportunities through the Project site.

Section 5. Existing Conditions

5.1 Existing Conditions and Land Use

The Project site, currently owned by RCTC, would increase the size of the planned commercial center within the Arantine Hills Specific Plan. The Project site has historically been farmed for citrus production between 1962 and 2007. Prior to the 1962 aerial photograph, the Project Site was vacant land. The former agricultural operation has reverted to ruderal vegetation, which is managed on an annual basis for fuel modification (fire prevention). In addition, Bedford Wash has been widened and improved with buried rip-rap along the banks and buried grade control structures to control erosion and scour. Two concrete crossings (upstream and downstream) provide access to the south side of the Wash and the associated maintenance access road. Restoration of Bedford Wash includes planting with an alluvial fan sage scrub seed mix.

The majority of the Project site (approximately 98 percent) consists of ruderal vegetation and disturbed/developed land. The remainder of the Project site (approximately 2 percent) consisting of Riversidian sage scrub and widened and restored Bedford Canyon Wash, see Figure 4.

The MSHCP requires habitat assessments within designated Survey Areas and focused surveys within areas of suitable habitat. For locations with positive focused survey results, the MSHCP requires that 90 percent of those portions of the property that provide for long-term conservation value for the identified species be avoided until it is demonstrated that conservation goals for the particular species are met. Findings of equivalency shall be made demonstrating that the 90-percent standard has been met. If the focus survey findings are negative, then a preconstruction survey is required 30 days prior to ground disturbance.

Surrounding land uses include the Arantine Hills Specific Plan to the south and west; commercial and Cajalco Road to the north; and the I-15 to the east.

5.2 Vegetation Communities

Four vegetation communities were observed within the Project site surrounding 500-foot Buffer. The acreages of vegetation communities and land covers are shown in Table 1 and depicted in Figure 4. As shown on Figure 5, the surrounding 500-foot buffer consists primarily of developed/disturbed vegetation community including; Interstate-15, Eagle Glen Road, graded and disturbed land within the Arantine Hills Project. A small portion of the 500-foot buffer area includes the Widened and Restored Bedford Canyon Wash.

As stated in Section 2 above, since the Regulatory Permits and DBESP/MSHCP Consistency Determination for the Arantine Hills Project previously accounted for the impacts associated with the widened and restored Bedford Canyon Wash improvements located within the Project site.

Table 1. Summary of Vegetation Communities Onsite[1]

Vegetation Community	Acreage within in the Project Site (acres)
Riversidian Sage Scrub/Chaparral	0.15
Widened and Restored Bedford Canyon Wash[2]	0.20
Ruderal	15.14
Disturbed/Developed	2.28
TOTAL	**17.77**

Notes:

1. Acreages presented in the table represent those found within the Project Boundary. The surrounding 500-foot buffer consists primarily of developed/disturbed vegetation community including; Interstate-15, Eagle Glen Road, graded and disturbed land within the Arantine Hills Project.

2. Included within the Arantine Hills Project, Widened and Restored Wash design. Specifically, the portion of the Widened and Restored Wash within the Project Boundary includes concrete ramps entering and exiting the Wash, buried riprap slope protections, and concrete Wash crossing.

Riversidian Sage Scrub/Chaparral

Approximately 0.15 acres of the Project site is comprised of Riversidian Sage Scrub/Chaparral. This vegetation community is located on the slope of the south bluff of Bedford Canyon Wash. The Riversidean Sage Scrub/Chaparral community is dominated by shrubs such as laurel sumac (*Malosma laurina*), white sage (Salvia apiana), toyon (*Heteromeles arbutifolia*), Mexican elderberry (*Sambucus mexicana*), California sagebrush (*Artemisia californica*), black sage (*Salvia mellifera*), deerweed (*Acmispon glaber*), California buckwheat (*Eriogonum fasciculatum*), chamise (*Adenostoma fasciculatum*), and tree tobacco (*Nicotiana glauca*). The understory of the community consists primarily of non-native species such as red brome (*Bromus madritensis ssp. rubens*), ripgut brome (*Bromus diandrus*), tocalote (*Centaurea melitensis*), and summer mustard (*Hirschfeldia incana*).

Widened and Restored Wash

Approximately 0.20 acres of the Project site is comprised of widened and restored Bedford Canyon Wash (Wash). The original Wash was widened from an approximately 90

feet to 200 feet. Various structures, including buried slope protection, buried grade control structures, and access ramps, are included within the design. The overall restored Wash will be hydroseeded with an alluvial fan sage scrub hydroseed mixture. Specifically, the portion of the Widened and Restored Wash within the Project Boundary includes concrete ramps entering and exiting the Wash, buried riprap slope protections, and the concrete Wash crossing and grade stabilization.

Ruderal

A total of 15.14 acres of the Project site consists of the ruderal community. This vegetation community occurs in the location of the historical citrus operations. It is generally maintained (trimmed) annually due to fire management. Vegetation within this area is comprised of predominantly of cheeseweed (*Malva parviflora*). Other species include Russian thistle (*Salsola tragus*), summer mustard (*Hirschfeldia incana*), rat-tail fescue (*Festuca microstachys*), foxtail brome (*Bromus madritensis ssp. rubens*), ripgut brome (*Bromus diandrus*), tocalote (*Centaurea melitensis*), Jimson weed (*Datura stramonium*), giant reed (*Arundo donax*), and a few scattered coyote bush (*Baccharis pilularis*), and laurel sumac (*Malosma laurina*).

Developed/Disturbed

A total of 2.28 acres of disturbed area consisting of bare dirt, dirt roads, and sparse vegetation is mapped onsite. The developed/disturbed community contains limited habitat value and includes non-native or invasive species. This community also includes areas of disturbance from both the grading of Arantine Hills and the construction of the Cajalco Interchange.

5.3 MSHCP Riparian/Riverine and Vernal Pool Assessment

Volume I, Section 6.1.2 of the MSHCP describes the process through which protection of riparian/riverine areas and vernal pools would occur within the MSHCP Plan Area. The purpose is to ensure that the biological functions and values of these areas throughout the MSHCP Plan Area are maintained such that habitat values for species inside the MSHCP Conservation Area are maintained.

The MSHCP defines riparian/riverine areas as:

> *…lands which contain Habitat dominated by trees, shrubs, persistent emergent mosses and lichens, which occur close to or which depend upon soils moisture from a nearby fresh water source; or areas with fresh water flow during all or a portion of the year.*

The MSHCP defines vernal pools as:

> *…seasonal wetlands that occur in depression areas that have wetlands indicators of all three parameters (soils, vegetation, and hydrology) during the wetter portion of the growing season but normally lack wetland indictors of hydrology and/or vegetation during the drier portion of the growing season.*

With the exception of wetlands created for the purpose of providing wetlands habitat or resulting from human actions to create open waters or from the alteration of natural stream courses, areas demonstrating characteristics as described above which are artificially created are not included in these definitions.

The only MSHCP Riparian and Riverine features located on the Project Site is Bedford Canyon Wash. The total inventory of MSHCP Riparian and Riverine is presented in Table 2 and shown on Figure 5. The Project site contains no vernal pools or depressions as defined under MSHCP vernal pool features.

As part of the implementation of the Arantine Hill Specific Plan, the acreage identified as Riparian/Riverine Habitat includes the widened and restored Bedford Wash. Specifically, the portion of the Widened and Restored Wash within the Project Boundary includes concrete ramps entering and exiting the Wash, buried riprap slope protection and a concrete Wash crossing that includes grade stabilization.

Table 2. Riparian/Riverine Habitat Onsite

Community Type	Acreage Onsite
Riparian/Riverine	0.20[1]
1. Widened and Restored Wash.	

Section 6. Results and Impact Analysis

6.1 Vegetation Communities

Proposed impacts to vegetation communities onsite is summarized in Tables 3 and 4 below based on the Alternative for Dirt Import for grading operations. Calculations were based on the currently proposed development design in combination with the vegetation map from the field survey and aerial imagery.

Indirect temporary impacts to plant communities include the effects of fugitive dust created by grading activities, vehicle construction traffic, or offsite discharge of surface water runoff with its associated erosion and sedimentation. Grading-related dust could settle on plant surfaces and indirectly inhibit metabolic processes such as photosynthesis and respiration. Grading-related erosion, runoff, sedimentation, soil compaction, and alteration of drainage patterns may affect plants by altering site conditions so that the location in which they are growing becomes unfavorable. Another example of indirect impacts includes the introduction and spread of invasive, exotic plants which could result in permanent indirect impacts to adjacent native plant communities.

6.1.1 Alternative 1: Off-site Dirt Import

Figure 6 and Table 3 provides the approximate total acreages of vegetation communities that will be permanently and temporary impacted by Project activities should Alternative 1 be implemented.

Table 3. Total Project Impacts with Alternative 1: Off-site Dirt Import - Onsite Vegetation Community Impacts[1]

Vegetation Community	Existing Vegetation onsite (acres)	Total Permanent Impacts (acres)	Total Temporary Impacts (acres)	Avoided (acres)
Riversidian Sage Scrub/Chaparral	0.15	0.00	0.00	0.15
Widened and Restored Bedford Canyon Wash[2]	0.20	0.01	0.00	0.19
Ruderal	15.14	14.32	0.00	0.82
Disturbed/Developed	2.28	2.00	0.00	0.28
TOTAL	**17.77**	**16.33**	**0.00**	**1.44**

Notes:
1. Acreages presented in the table represent those found within the Project Boundary. The surrounding 500-foot buffer consists primarily of developed/disturbed vegetation community including; Interstate-15, Eagle Glen Road, graded and disturbed land within the Arantine Hills Project.

2. Included within the Arantine Hills Project, Widened and Restored Wash design. Specifically, the portions of the Widened and Restored Wash within the Project Boundary includes concrete ramps entering and exiting the Wash, buried riprap slope protection, and concrete Wash crossing.

Impacted Native Habitat

Direct impacts to 16.33 acres on the Project site as a result of Alternative 1 are not considered significant because the habitats are common in the Project Vicinity and have minimal habitat value and are non-native habitats. Furthermore, these impacts do not represent CNDDB, State, or MSHCP sensitive plant communities. In addition, many of these areas within the Study Area exhibit a moderate or high level of disturbance.

Of the total 16.33 acres impacted onsite, the 0.01 acre of impacts to Bedford Canyon Wash would occur within an area that was previously disturbed through authorization of Regulatory Permits for the widening and restoration of Bedford Canyon Wash and does not contain native vegetation. Therefore, no new impacts to jurisdictional waters would occur and no additional Regulatory Permits are required.

No direct impacts are expected to occur within the surrounding buffer area. Indirect impacts to the surrounding 500-foot buffer area could occur from construction activities, however impacts would be less than significant because no sensitive habitat or sensitive species are located within the Buffer Area, the habitats are common in the Project Vicinity; the area consists of disturbed/developed vegetation communities; and construction BMP's such as compliance with air quality regulations would require frequent watering during construction activities to minimize dust.

6.1.2 Alternative 2:PA 14 Dirt Import

Figure 7 and Table 4 provides the approximate total acreages of vegetation communities that will be permanently and temporary impacted by Project activities should Alternative 2 for importing dirt be implemented.

Table 4. Total Project Impacts with Alternative 2: PA14 Dirt Import – Onsite Vegetation Community Impacts[1]

Vegetation Community	Existing Vegetation onsite (acres)	Total Permanent Impacts (acres)	Total Temporary Impacts[3] (acres)	Avoided (acres)
Riversidian Sage Scrub/Chaparral	0.15	0.00	0.10	0.05
Widened and Restored Bedford Canyon Wash[2]	0.20	0.01	0.09[4]	0.10
Ruderal	15.14	14.86	0.00	0.28
Disturbed/Developed	2.28	2.05	0.00	0.23

TOTAL	**17.77**	**16.92**	**0.19[3]**	**0.66**

Notes:

1. Acreages presented in the table represent those found within the Project Boundary. The surrounding 500-foot buffer consists primarily of developed/disturbed vegetation community including; Interstate-15, Eagle Glen Road, graded and disturbed land within the Arantine Hills Project.

2. Included within the Arantine Hills Project, Widened and Restored Wash design. Specifically, the portions of the Widened and Restored Wash within the Project Boundary includes concrete ramps entering and exiting the Wash, buried riprap slope protection, and concrete Wash crossing.

3. Temporary impacts are due to the access ramp from Phase 2B to the commercial site, which is to be constructed during grading operations. Following the completion of the grading operations the temporary dirt ramp would be removed and the bluff will be reconstructed and replanted with coastal sage scrub mix.

4. The 0.09 acres of temporary impacts to the Widened and Restored Bedford Canyon Wash occur completely within the limits of the existing concrete pad crossing and do not impact native or seeded habitat.

Impacted Native Habitat

Of the total 16.92 acres impacted onsite as a result of Alternative 2, direct impacts to 16.91 acres are not considered significant because the habitats are common in the Project Vicinity and have minimal habitat value and are non-native habitats. Furthermore, these impacts do not represent CNDDB, State, or MSHCP sensitive plant communities. In addition, many of these areas within the Study Area exhibit a moderate or high level of disturbance.

Of the total 16.92 acres impacted onsite, the 0.01 acre of impacts to Bedford Canyon Wash would occur within an area that was previously disturbed through authorization of Regulatory Permits for the widening and restoration of Bedford Canyon Wash. Therefore, no new impacts to jurisdictional waters would occur and no additional Regulatory Permits are required.

Temporary impacts would occur to 0.19 acres. These impacts are due to the construction of an access ramp leading down to the existing concrete crossing of Bedford Canyon Wash. Grading the access ramp would require creating a notch in the existing bluff with side slopes and temporarily fill placed on top of the existing concrete pad crossing.

Following completion of the grading operations, the temporary dirt bridge and culverts would be removed from the concrete pad crossing Bedford Canyon Wash and the notch in the bluff for the access ramp would be reconstructed at 2:1 slopes and surface terrace drains would be added to control storm runoff to minimize erosion. The graded slopes would be replanted with a native coastal sage scrub mix.

No direct impacts are expected to occur within the surrounding buffer area. Indirect impacts to the surrounding 500-foot buffer area could occur from construction activities,

however impacts would be less than significant because no sensitive habitat or sensitive species are located within the Buffer Area, the habitats are common in the Project Vicinity; the area consists of disturbed/developed vegetation communities; and construction BMP's such as compliance with air quality regulations would require frequent watering during construction activities to minimize dust.

6.2 Section 6.1.2 - Riparian/Riverine Areas and their Associated Species

The Project site was assessed for MSHCP riparian/riverine areas and vernal pools pursuant to Section 6.1.2 of the MSHCP. The Project site contains MSHCP riparian/riverine features, which are associated with the previously authorized widened and restored Bedford Canyon Wash. Impacts to Bedford Wash are associated with construction of an outlet and a temporary dirt bridge (Alternative 2).

Implementation of the Arantine Hills Specific Plan includes the widening, protection, and restoration of Bedford Canyon Wash. To permit those activities, the following Regulatory Permits and MSHCP Consistency Determination were issued:

- U.S. Army Corps of Engineers (Corps File No. SPL-2015-00361-ERS)
- California Department of Fish and Wildlife (Notification No. 1600-2015-0055-R6):
- Regional Water Quality Control Board (SARWQCB Project NO. 332014-24)
- U.S. Fish and Wildlife Service (FWS-WRIV-15B0271-16F0852)
- MSHCP Consistency Determination and Determination of Biologically Equivalent or Superior Preservation (DBESP) (FWS/CDFW-15BO0271-15CPA0281)

The Regulatory Permits and MSHCP Consistency authorized the widening and restoration of Bedford Wash, including certain improvements for flood protection. Buried rip-rap extending down to scour depth was permitted along both sides of the Wash. Grade stabilizing structures were permitted perpendicular to flows. Several stormdrain outlet structures surrounded by a concrete structure were incorporated into the rip-rap lined banks to outlet storm flows from the development area into Bedford Wash. Additionally, two concrete crossings were permitted, at the far upstream and downstream limits within the Arantine Hills Specific Plan. The concrete crossings allow maintenance vehicles to cross the Wash and access the bluff side. Additionally, a future bridge crossing Bedford Wash is authorized by the Regulatory Permits. The Regulatory Permits remain active and Project activities authorized under the permits remain on-going.

The proposed Project has two components that could affect the jurisdictional areas of Bedford Canyon Wash. One component of the Project is a storm drain pipe from the on-site detention basin that must outlet into Bedford Wash. The Project proposes to outlet

the storm drain pipe with the same design as other outlets into Bedford Wash, with the pipe outletting through a concrete structure constructed into the rip-rap lined bank of Bedford Wash, which results in approximately 0.01 acre of modification to the rip-rap lined bank of Bedford Wash (Figure 6). For the proposed Project, the outlet structure will be constructed on the downstream concrete crossing, eliminating any impacts to the soft bottom portion of the Wash. Since the outlet structure is located outside of the invert of Bedford Canyon Wash, construction of the outlet structure would occur beyond the jurisdictional limits of Waters of the United States. Furthermore, since the proposed outlet structure is located in an area of Bedford Wash that was previously disturbed through authorization of Regulatory Permits and MSHCP Consistency Determination for the widening and restoration of Bedford Canyon Wash, and those permits remain active, no new impacts to Waters of the State or MSHCP Features would occur and no additional Regulatory Permits are required.

The second component of the Project would only occur if Alternative 2, which includes moving fill dirt from Planning Area 14 to the Project site across Bedford Wash, is implemented. In order to move fill dirt across Bedford Wash, fill would be temporarily placed on top of the existing concrete pad crossing Bedford Canyon Wash to both protect the concrete pad and function as a ramp to gain elevation. A notch would be graded into the plateau to the south of Bedford Wash and scrapers would move dirt across the temporary earthen ramp placed on the existing concrete pad crossing Bedford Wash. The placement of temporary fill on the concrete pad would cover an area of 0.09 acre of Waters of the State/MSHCP Features and 0.06 acres of Waters of the United States, which matches the area of the existing concrete pad crossing (Figure 7). No temporary fill dirt would be placed in the soft-bottom portion of Bedford Wash. Since the proposed ramp is located in an area that consists of existing concrete and was previously disturbed through authorization of Regulatory Permits for the widening and restoration of Bedford Canyon Wash, and those permits remain active, no new impacts to Waters of the State, Waters of the United States, or MSHCP Features would occur and no additional Regulatory Permits are required.

6.2.1 Impacts to Species Protected under Section 6.1.2

During vegetation mapping conducted for the Project site, no special status plants were detected during the 2019 surveys. Likewise, the Project site did not contain any suitable habitat for the avian species listed in Section 6.1.2: Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools. Regardless of the Dirt Import Alternative implemented, no impacts to those special status plants and wildlife listed in Section 6.1.2 of the MSHCP are associated with Project implementation.

6.2.2 Vernal Pools

The Project site does not contain suitable habitat for any of the riparian/riverine vernal pool species listed in Section 6.1.2 of the MSHCP, including listed fairy shrimp. Regardless of the Dirt Import Alternative implemented, no impacts to those species listed in Section 6.1.2 of the MSHCP are associated with Project implementation and Dirt Import Alternative.

6.3 Section 6.1.2 - Riparian/Riverine Areas and their Associated Species

Portions of the Project site are located within the Narrow Endemic Plant Species Survey Areas (NEPSSA) Number 7, which include the following target species:

Narrow Endemic Plants

- San Diego ambrosia (*Ambrosia pumila*)
- Brand's phacelia (*Phacelia stellaris*)
- San Miguel savory (*Satureja chandleri*)

No special status plant species were observed during the 2019 surveys and none are expected to occur onsite due to the lack of suitable habitat or suitable soil found on the Project site; therefore, there are no potential impacts to special status plants due to Project implementation regardless of the Import Alternative implemented.

6.4 Section 6.3.2 -- Species Survey Requirements

The majority of the Project site supports suitable habitat for the BUOW based on the June habitat assessment. No BUOWs, suitable sized burrows, or evidence of BUOWs were observed on site within the Project site and surrounding 500-foot buffer during the focused surveys. A majority of the Project site was characterized by heavily vegetated ruderal fields and lacking adequately sized burrows to provide suitable nesting habitat for BUOW. Much of the buffer area is developed/disturbed. California ground squirrels were observed within the Project site and surrounding 500-foot buffer. The Project site contained no BUOW or keys signs (sight, whitewash, burrows, bones, feathers, pellets, nests, and calls). Furthermore, the Project site is maintained for fire abatement and the property adjacent to the Project site has active construction and grading activities (Arantine Hills Construction and I-15/Cajalco construction). Therefore, based on the lack of suitable BUOW burrows, adjacent construction activities, and maintenance and mowing of the Project site is not considered occupied by BUOW.

Section 7. Description of Avoidance and Mitigation Measures

The guidelines presented in Section 6.1.4 of the MHSCP are intended to address indirect effects associated with locating development in proximity to the MSHCP Conservation Area. Development located in proximity to the MSHCP Conservation Area may result in edge effects that will adversely affect biological resources within the Conservation Area. The Project Site is not within or adjacent to a Criteria Cell and, therefore, a discussion of the effects pertaining to the urban/wildlife interface is not required.

7.1 Section 6.1.2 Riparian/Riverine Areas and their Associated Species

7.1.1 Avoidance and Minimization – Riparian/Riverine Areas

As part of both Project dirt import alternatives and Project implementation, an outlet will be installed within the buried riprap slope protection of Bedford Canyon Wash. The apron for the outlet opening occurs at the downstream concrete Wash crossing.

As part of Import Alternative 2, temporary impacts will occur due to the construction of an access ramp leading down to the existing concrete pad crossing of Bedford Canyon Wash. Fill would be temporarily placed on top of the existing concrete pad crossing Bedford Canyon Wash to both protect the concrete pad and function as a ramp to gain elevation. The temporary impacts total 0.09 acre of MSHCP Features will occur on the existing concrete pad crossing only (Figure 7). Furthermore, following the completion of the grading operations, the temporary dirt bridge and culverts would be removed from the concrete pad crossing Bedford Canyon Wash. Further detail is provided in Section 6.2.

Since the proposed outlet structure and temporary dirt bridge are located in an area of Bedford Wash that was previously disturbed through authorization of Regulatory Permits and MSHCP Consistency for the widening and restoration of Bedford Canyon Wash, no new impacts to MSHCP Riparian/Riverine Features would occur.

7.1.2 Mitigation – Riparian/Riverine Areas

For both Project dirt import alternatives, since the proposed outlet structure is located in an area of Bedford Wash that was previously disturbed through authorization of Regulatory Permits and MSHCP Consistency for the widening and restoration of Bedford Canyon Wash, no new impacts to MSHCP Riparian/Riverine Features would occur and no compensatory mitigation is required.

7.2 Section 6.1.3 Narrow Endemic Plant Species

7.2.1 Avoidance and Minimization - Narrow Endemic Plant Species

No narrow endemic plant species were observed during the 2019 surveys, and the Project site does not contain suitable habitat or soils; therefore, no avoidance and minimization measures are proposed.

7.2.2 Mitigation - Narrow Endemic Plant Species

No narrow endemic plant species were observed during the 2019 surveys, and the Project site does not contain suitable habitat or soils; therefore, no compensatory mitigation measures are proposed.

7.3 Section 6.3.2 -- Species Survey Requirements

7.3.1 Avoidance and Minimization – Burrowing Owl

Complete avoidance of the BUOW habitat is not feasible for Import Alternative 1 and 2.

Pre-construction presence/absence surveys for burrowing owl within the survey area where suitable habitat is present shall be conducted by a qualified biologist within 30 days of ground disturbing activities for both Import Alternatives.

If active burrowing owl burrows are detected during the breeding season, all work within 300 feet of any active burrow will be halted until that nesting effort is finished. The on-site biologist will review and verify compliance with these boundaries and will verify the nesting effort has finished. Work can resume when no other active burrowing owl burrows nests are found.

If active burrowing owl burrows are detected outside the breeding season or during the breeding season and it is determined nesting activities have not begun, then passive and/or active relocation may be approved following consultation with CDFW. The installation of one-way doors may be installed as part of a passive relocation program. Burrowing owl burrows shall be excavated with hand tools when determined to be unoccupied by Project biologist, and back filled to ensure that animals do not re-enter the burrows.

Upon completion of the survey and any follow-up construction avoidance management, a report shall be prepared and submitted to CDFW, and the City for mitigation monitoring compliance record keeping.

7.3.2 Mitigation – Burrowing Owl

Compensatory mitigation is not proposed because impacts to the burrowing would be avoided and/or minimized to less than significant for both Import Alternatives.

Section 8. Consistency Analysis

8.1 Section 6.1.2 - Riparian/Riverine Areas and their Associated Species

As part of both Import Alternatives and Project implementation, an outlet will be installed within the buried riprap slope protection of Bedford Canyon Wash. The apron for the outlet opening occurs at the downstream concrete Wash crossing.

As part of Alternative 2 grading operations, temporary impacts will occur due to the construction of an access ramp leading down to the existing concrete pad crossing of Bedford Canyon Wash. Fill would be temporarily placed on top of the existing concrete pad crossing Bedford Canyon Wash. Following the completion of the grading operations, the temporary dirt bridge and culverts would be removed from the concrete pad crossing Bedford Canyon Wash.

Since the proposed outlet structure and temporary dirt bridge are located in an area of Bedford Wash that was previously disturbed through authorization of Regulatory Permits and MSHCP Consistency for the widening and restoration of Bedford Canyon Wash, no new impacts to MSHCP Riparian/Riverine Features would occur. No species under "Purpose" of Section 6.1.2 were found in the riparian/riverine areas of the Project site.

Therefore, the proposed Project is consistent with Section 6.1.2 (Riparian/Riverine Guidelines) of the MSHCP.

The Project site is not located within or adjacent to any MSHCP Conservation Area. The area does not support the Section 6.1.2 species. Thus, no mitigation is proposed.

8.2 Section 6.1.3 – Protection of Narrow Endemic Plant Species

No narrow endemic plant species were observed in the 2019 surveys, and the Project site does not contain suitable habitat or soils.

8.3 Section 6.3.2 - Species Survey Requirements

No BUOWs or BUOW burrows were located within the Project site per the results of the focused surveys.

Regardless of the Import Alternative, the Project will be required to conduct a 30-day pre-construction survey for the BUOW according to the MSHCP Volume II, Birds, BUOW, Conservation Objective 6: "Pre-construction presence/absence surveys for burrowing owl

within the survey area where suitable habitat is present will be conducted for all Covered Activities through the life of the permit. Surveys will be conducted within 30 days prior to disturbance. Take of active nests will be avoided. Passive relocation (use of one-way doors and collapse of burrows) will occur if owls are present outside the nesting season."

The Project is consistent with Section 6.3.2 (Species Surveys). While the Project site supports suitable habitat for the BUOW, during the focused surveys no BUOWs, or diagnostic signs of BUOWs were observed within the Project site and surrounding 500-foot buffer. However, the Project will be required to conduct a 30-day pre-construction survey for the BUOW according to *MSHCP Volume II, Birds, Burrowing Owl, Conservation Objective 6,* which states that pre-construction presence/absence surveys for the BUOW where suitable habitat is present within the survey area will be conducted 30 days prior to disturbance and ensures that take of active nests will be avoided and passive relocation will occur when owls are present outside the nesting season.

Section 9. List of Preparers

This report was prepared by Carlson Strategic Land Solutions:
- Peter Carlson, President
- Brianna Bernard, Project Manager and Biologist

Section 10. References

American Ornithologists' Union (AOU). 1998. Checklist of North American Birds, Seventh Edition. American Orinthologists' Union, Washington, D.C. Accessed using the AOU website at http://www.aou.org/checklist/north/

California Department of Fish and Wildlife. 2016. Complete List of Amphibian, Reptile, Bird, and Mammal Species in California. State of California Resources Agency. Sacramento, California.

California Native Plant Society. 2001. Inventory of Rare and Endangered Plants of California. (Sixth Edition). Rare Plant Advisory Committee, David P. Tibor, Convening Editor, California Native Plant Society. Sacramento, California, 388 pp.

California Native Plant Society. 2019. Inventory of Rare and Endangered Plants of California. (Seventh Edition). Accessible online at http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi

Collins, Joseph T. and Travis W. Taggart. 2009. Standard Common and Current Scientific Names for North American Amphibians, Turtles, Reptiles, and Crocodilians. Sixth Edition. Publication of The Center For North American Herpetology, Lawrence. iv +44p.

Carlson Strategic Land Solutions. October 2019. Biological Technical Report for the Bedford Marketplace Project.

Haug, E.A., B.A. Millsap, and M.S. Martell. 1993. Burrowing Owl (Speotyto cunicularia). The Birds of North America, No. 130 (A. Poole and F. Gill, Eds.) Philadelphia: The Academy of Natural Sciences; Washington, D.C.: The American Ornithologists' Union.

Hickman, J.C., Ed. 1993. The Jepson Manual: Higher Plants of California. University of California Press. 1,400 pp.

Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Nongame-Heritage Program, California Department of Fish and Game.

Munz, P.A. 1974. A Flora of Southern California. University of California Press. 1,086 pp.

Nelson, J. 1984. Rare plant survey guidelines. In: Inventory of rare and endangered vascular plants of California. J. Smith and R. York (eds). Special Publication No. 1. California Native Plant Society.

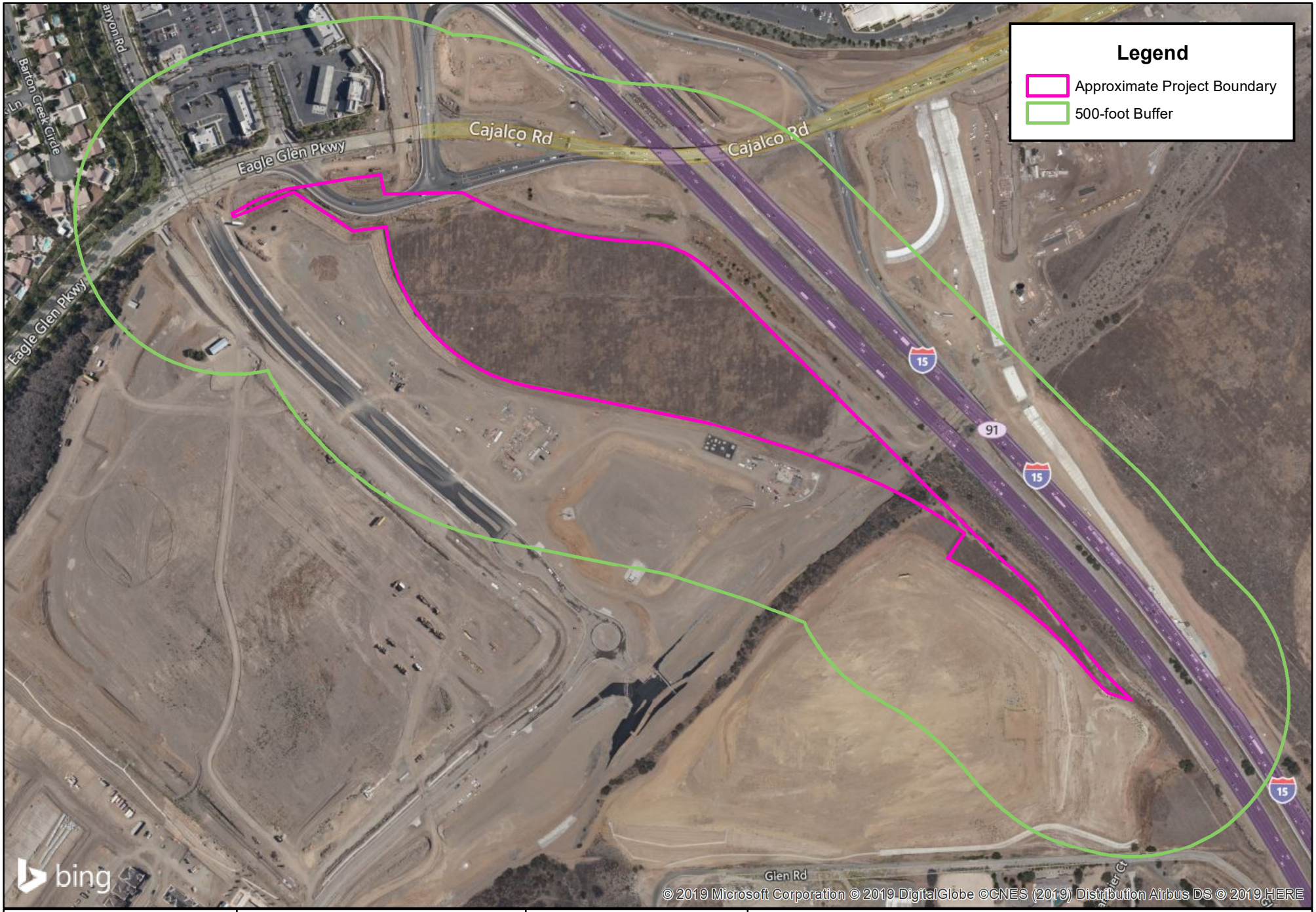
Roberts, F.M., S.D. White, A.C. Sanders, D.E. Bramlet, and S. Boyd. 2004. The Vascular Plants of Western Riverside County, California, An Annotated Checklist. F.M. Roberts Publications. 192 pp.

Figures



GIS Prepared By: Carlson SLS Created: August 2, 2019	0 1,250 2,500 5,000 Feet 1 inch = 5,000 feet	Data Sources: Bing Maps	***Guardian Capital: Bedford Marketplace*** Regional Map

FIGURE 1



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

0 100 200 400 600 800 Feet

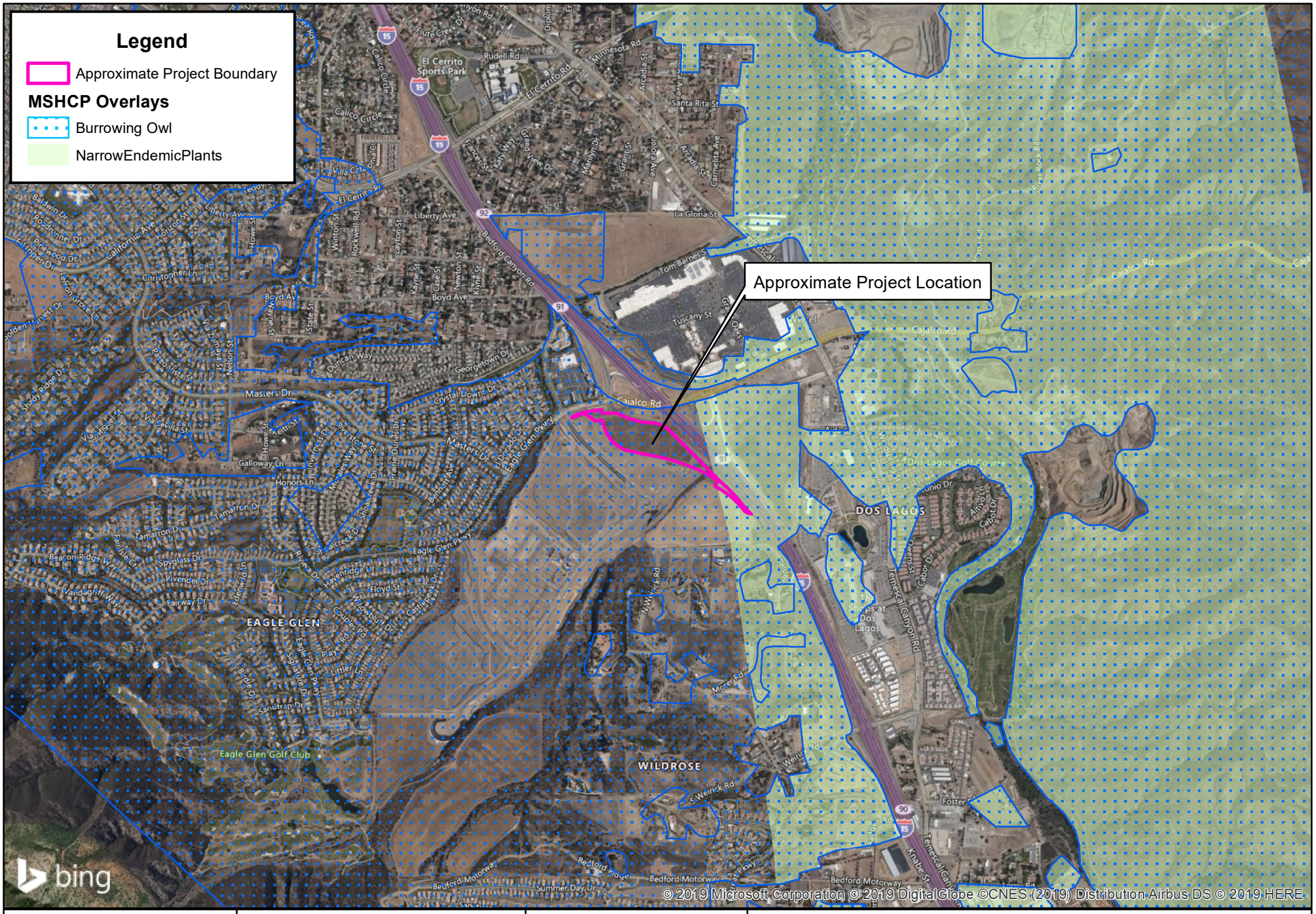
1 inch = 400 feet

Data Source: Bing Maps

Guardian Capital: Bedford Marketplace

Vicinity Map

FIGURE 2



GIS Prepared By:
Carlson SLS

Created: October 7, 2019

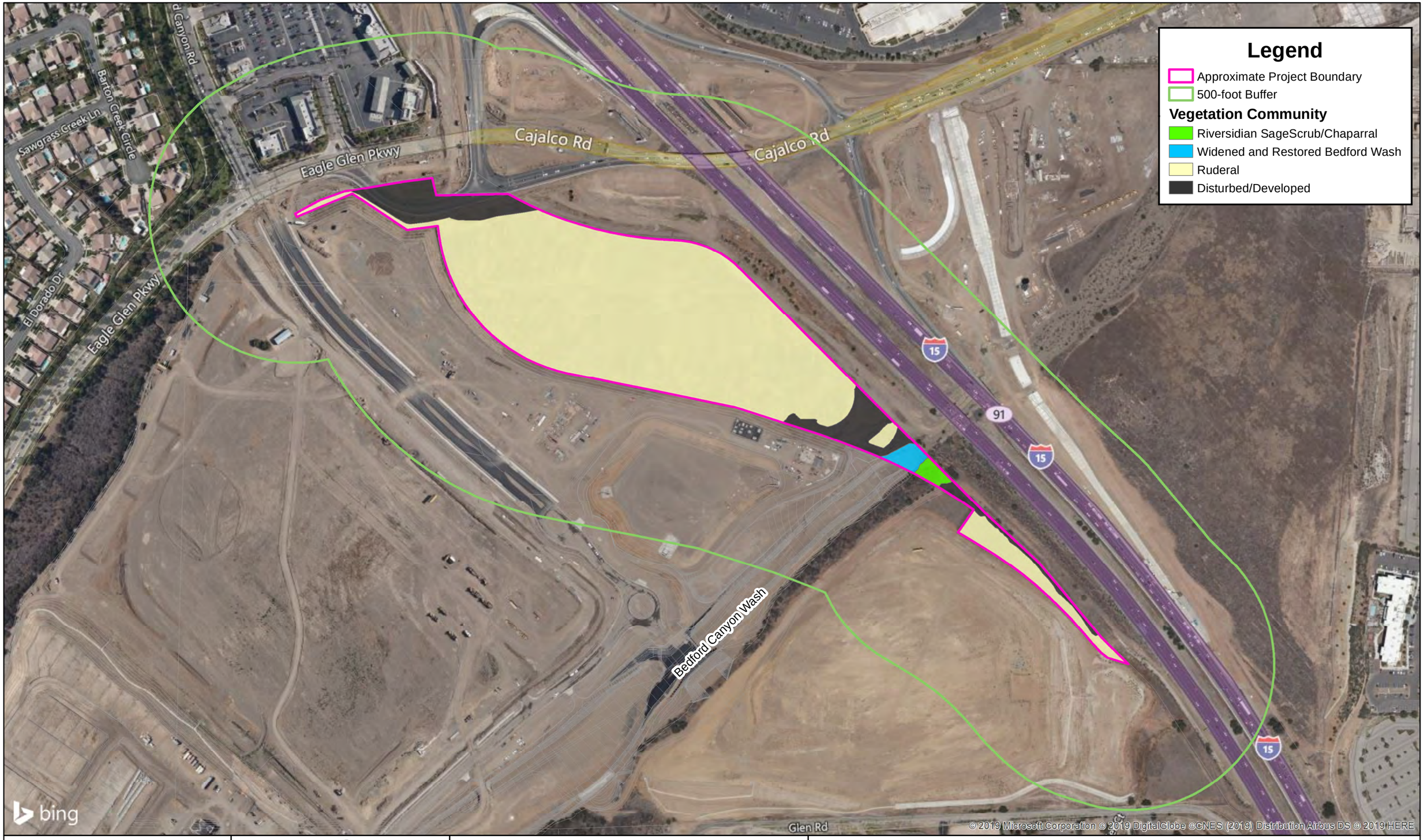
0 500 1,000 2,000 3,000 4,000 Feet
1 inch = 2,000 feet

Data Source: Bing Maps
CH (03/2015)

Guardian Capital: Bedford Marketplace

MSHCP Overlay Results

FIGURE 3



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

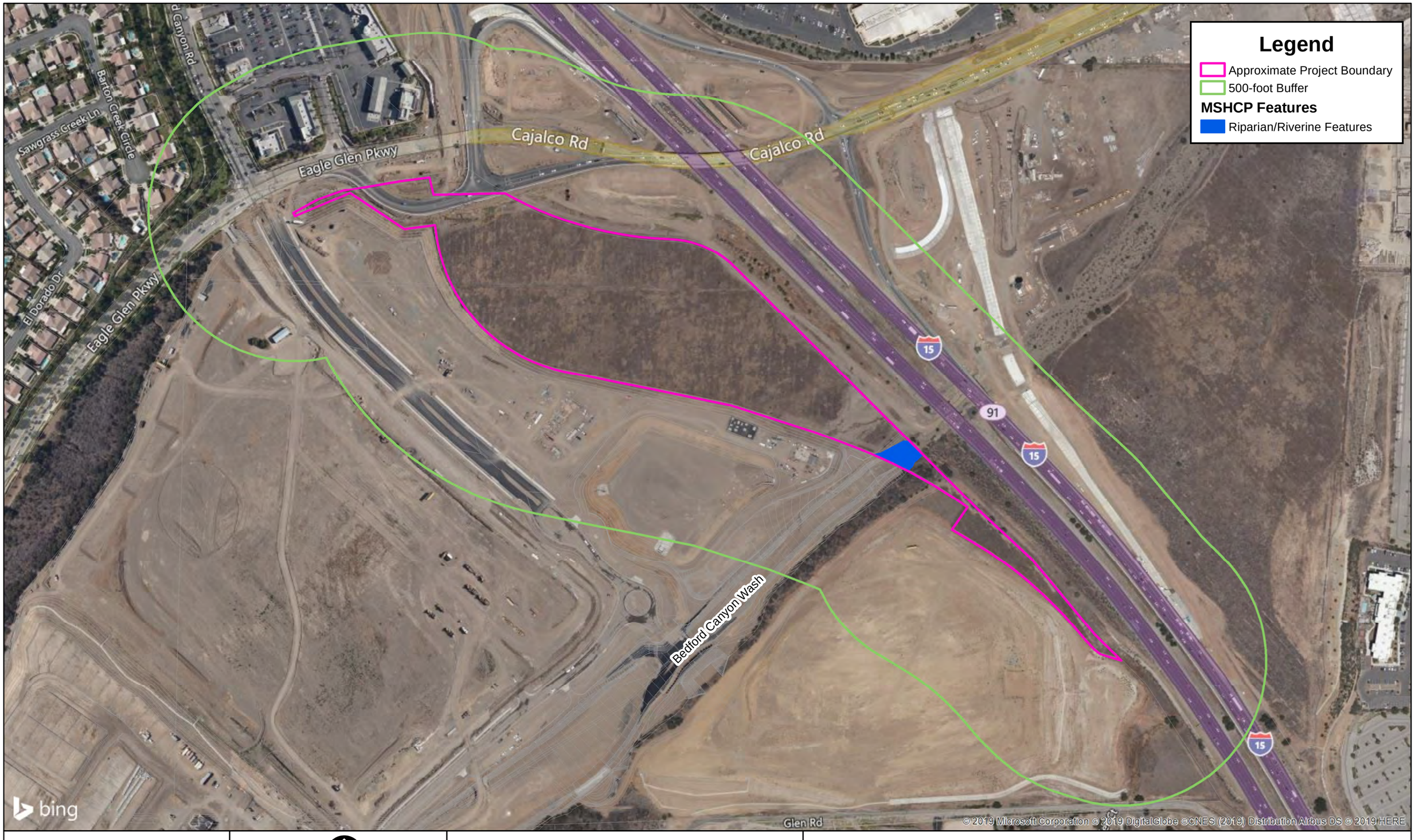
0 75 150 300 450 600 Feet
1 inch = 300 feet

Data Source: Bings Map
Field Visit (06/27/19)

Guardian Capital: Bedford Marketplace

Vegetation Map

FIGURE 4



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

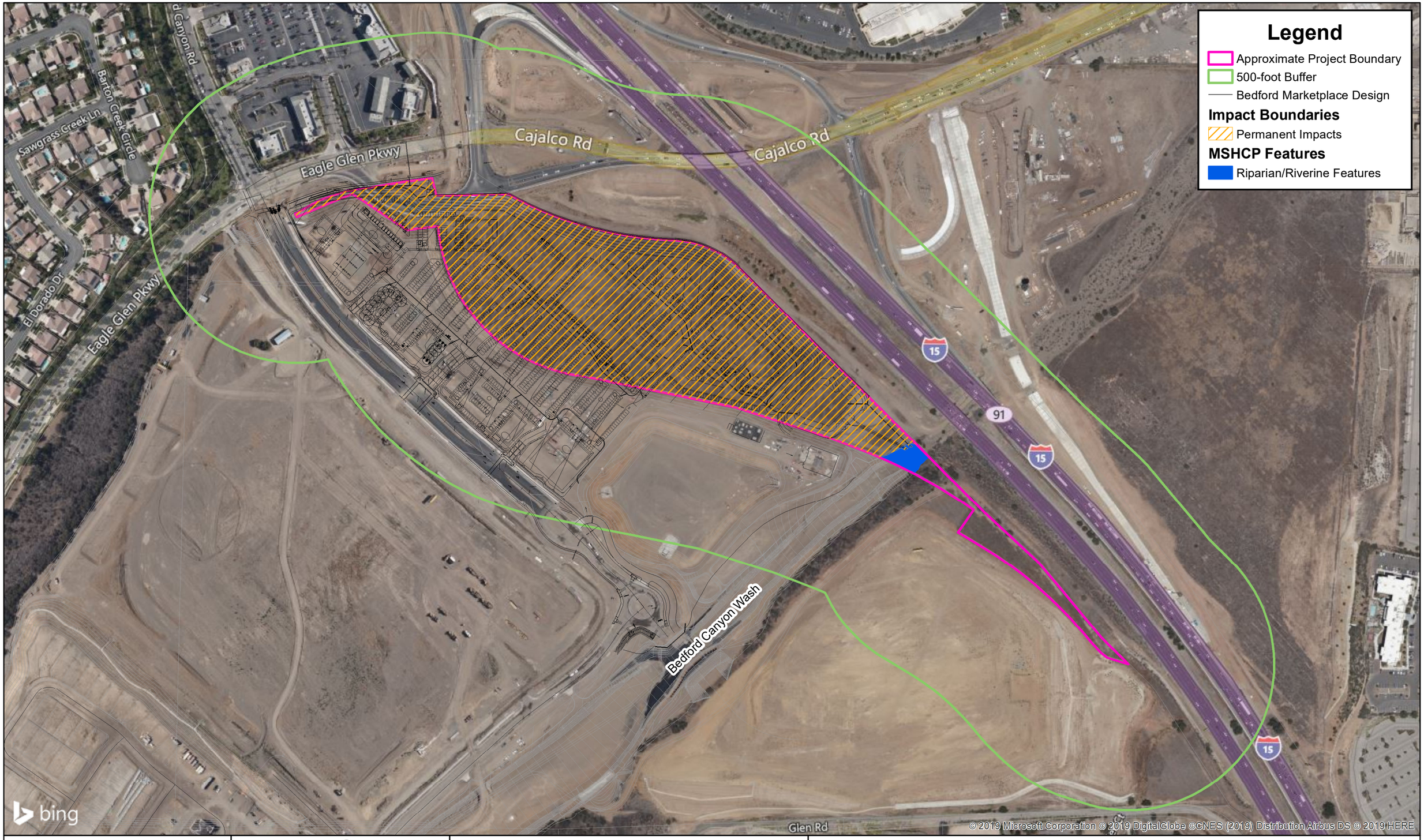
Feet
0 75 150 300 450 600
1 inch = 300 feet

Data Source: Bings Map
Field Visit (06/27/19)

Guardian Capital: Bedford Marketplace

MSHCP Riparian/Riverine Features

FIGURE 5



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

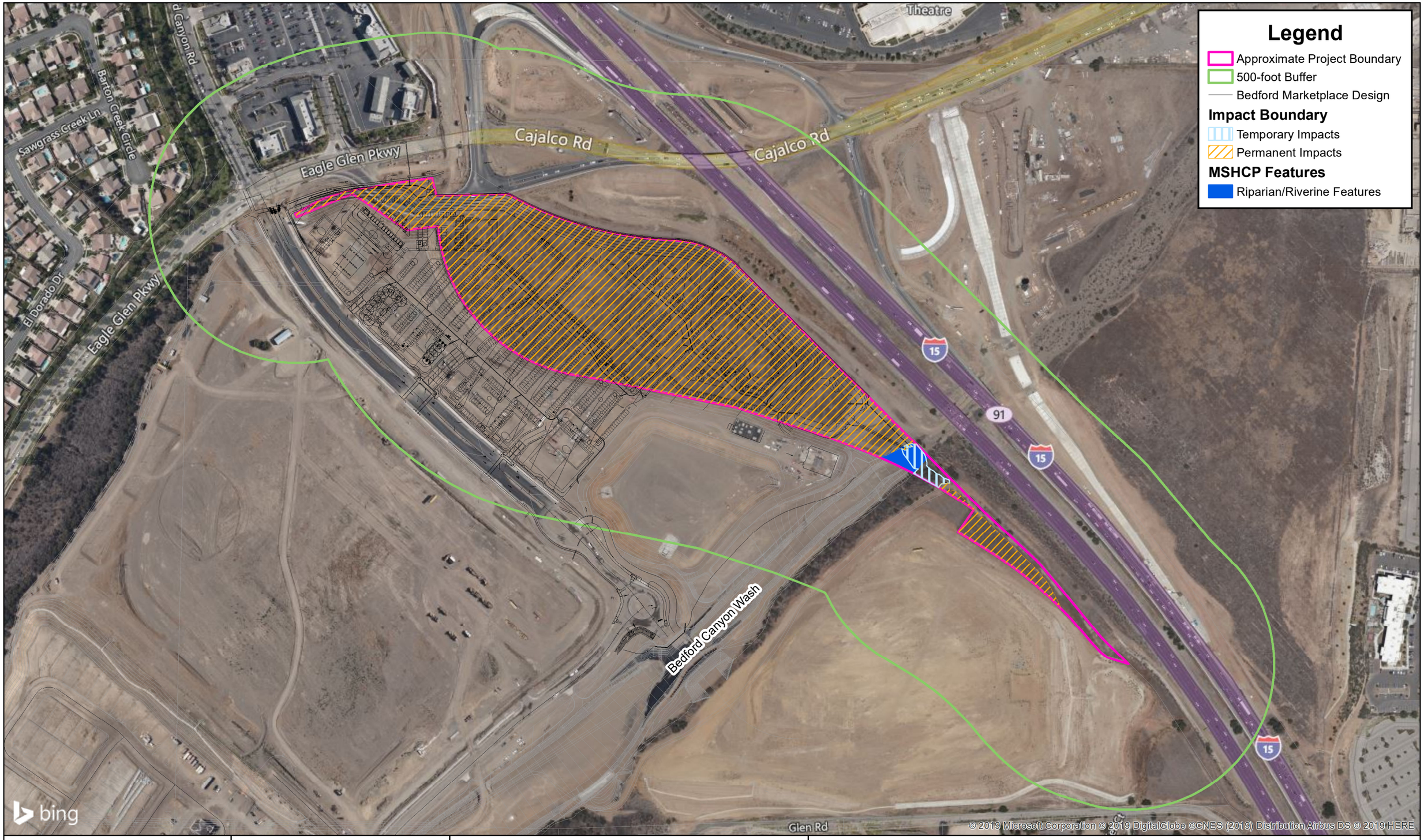
0 75 150 300 450 600 Feet
1 inch = 300 feet

Data Source: Bings Map
Field Visit (06/27/19)
Hunsaker (08/08/19)

Guardian Capital: Bedford Marketplace

Alternative 1: Off-site Dirt Import Riparian/ Riverine Habitat Impacts

FIGURE 6



GIS Prepared By:
Carlson SLS

Created: October 24, 2019

0 75 150 300 450 600 Feet
1 inch = 300 feet

Data Source: Bings Map
Field Visit (06/27/19)
Hunsaker (08/08/19)

Guardian Capital: Bedford Marketplace

Alternative 2: PA 14 Dirt Import - Riparian/Riverine Habitat Impacts

FIGURE 7

APPENDIX A

Biological Technical Report for Bedford Marketplace (October 2019)

Biological Technical Report for the Bedford Marketplace Project

***Prepared for*:**

Guardian Capital
5780 Fleet Street, Suite 225
Carlsbad, CA 92008
Contact: Glen Powles



***Prepared by*:**

Carlson Strategic Land Solutions
327134A Paseo Espada, Suite 323
San Juan Capistrano, CA 92675
Phone: (949) 542-7042
Contact: Brianna Bernard

October 2019

TABLE OF CONTENTS

Acronyms, Abbreviations, and Glossary of Terms iv

1.0 Introduction **6**

1.1 Purpose and Approach 6
1.2 Project Terms 6
1.3 Project Location 6
1.4 Existing and Historical Land Use 7

2.0 Project Description **8**

3.0 Regulatory Context **9**

3.1 Federal Laws and Regulations 9
3.2 California State Laws and Regulations 9
3.3 Local Plans/Regulations 9
3.4 Regulatory Permits 9

4.0 Survey and Methods **10**

4.1 Literature Review 10
4.1.1 Sensitive Plant Communities 10
4.1.2 Critical Habitat 10
4.1.3 Special Status Plants and Wildlife 11
4.1.4 Jurisdictional Waters 13
4.1.5 MSHCP Assessment 13
4.2 Biological Survey 14
4.2.1 General Biological Survey 14
4.3 Focused Burrowing Owl Survey 15
4.4 Jurisdictional Delineation 15

5.0 Results **17**

5.1 Vegetation Communities 17
5.1.1 Riversidian Sage Scrub/Chaparral 18
5.1.2 Widened and Restored Wash 18
5.1.3 Ruderal 18
5.1.4 Developed/Disturbed 19
5.2 Plants 19
5.3 Critical Habitat 20
5.4 Wildlife 20
5.4.1 Wildlife Species Observed or Detected 23

5.5 Focused Burrowing Owl Survey 24
5.6 Regional Connectivity/Wildlife Movement 24
5.6.1 Wildlife Movement within the Study Area 26
5.7 Jurisdictional Areas 26
5.7.1 Waters of the United States 26
5.7.2 Waters of the State 27
5.7.3 MSHCP Riparian/Riverine and Vernal Pool Assessment 27
5.8 MSHCP Assessment 28
5.9 Soils Mapping 28

6.0 Project Impacts 30

6.1 Impacts to Vegetation Communities/Habitats 30
6.1.1 Total Project Impacts with Alternative 1: Off-site Dirt Import 31
6.1.2 Total Project Impacts with Alternative 2: PA 14 Dirt Import 32
6.2 Potential Impacts to Special Status Plants 33
6.3 Potential Impacts to Critical Habitat 33
6.4 Potential Impacts to Special Status Wildlife 33
6.5 Potential Impacts to Wildlife Movement 36
6.6 Potential Impacts to Jurisdictional Features 36
6.7 Potential Impacts to MSHCP Features 38

7.0 BMPs/PDFs Incorporated into the Project and MMRP 39

8.0 Significance Determination and Proposed Mitigation 40

8.1 Threshold No. 1 40
8.2 Threshold No. 2 41
8.3 Threshold No. 3 42
8.4 Threshold No. 4 42
8.5 Threshold No. 5 43
8.6 Threshold No. 6 43

9.0 Cumulative Impacts 45

10.0 Literature Cited 46

TABLES

Table 1. Vegetation Community Observed within the Project Site[1] 18
Table 2. Jurisdictional Waters of the United States within the Project site 26
Table 3. Jurisdictional Waters of the State within the Project Site 27
Table 4. Riparian/Riverine Habitat 28

Table 5. Total Project Impacts with Alternative 1: Off-site Dirt Import – On-Site Vegetation Community Impacts 31
Table 6. Total Project Impacts with Alternative 2: PA 14 Dirt Import – On-Site Vegetation Community Impacts[1] 32
Table 7. Impact Analysis Summary for Special Status Species 34

FIGURES

Figure 1 Regional Map
Figure 2 Project Vicinity Map
Figure 3 CNDDB Occurrences
Figure 4 Critical Habitat and MSHCP Overlays Results
Figure 5 Vegetation Map
Figure 6 Jurisdictional Delineation
Figure 7 MSHCP Riparian/Riverine Features
Figure 8 Soils Map
Figure 9 Alternative 1: Off-site Dirt Import Vegetation Impacts Map
Figure 10 Alternative 2: PA 14 Dirt Import Vegetation Impacts Map
Figure 11 Alternative 1: Off-site Dirt Import Jurisdictional and MSHCP Feature Impacts
Figure 12 Alternative 2: PA 14 Dirt Import Jurisdictional and MSHCP Feature Impacts

APPENDICES

Appendix A Focused Survey Results
- Focused Burrowing Owl Report

Appendix B Representative Photographs of Community Classification

Appendix C Special Status Plant Species Potential Occurrence Determination

Appendix D Plant Species Recorded During the Field Surveys

Appendix E Special Status Wildlife Species Potential Occurrence Determination

ACRONYMS, ABBREVIATIONS, AND GLOSSARY OF TERMS

Applicant	Bedford Marketplace, LLC
BLM	United States Bureau of Land Management
BMPs	Best Management Practices
CAGN	coastal California gnatcatcher
CDF	California Department of Forestry and Fire Protection
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Corps	United States Army Corps of Engineers
CRPR	California Rare Plant Rank
CWA	Clean Water Act
FESA	Federal Endangered Species Act
FGC	California Fish and Game Code
GIS	Geographic Information System
GPS	Global Positioning System
LBV	least Bell's vireo
MBTA	Migratory Bird Treaty Act
MMRP	Mitigation, Monitoring, and Reporting Program
MSHCP	Western Riverside Multiple Species Habitat Conservation Plan
MSL	mean sea level
NEPA	National Environmental Protection Act
NHD	National Hydrography Dataset
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OHWM	Ordinary High-Water Mark
Project	Bedford Marketplace Project
RWQCB	Regional Water Quality Control Board
SAA	Section 1600 Streambed Alteration Agreement

SLS	Carlson Strategic Land Solutions
SWPPP	Storm Water Pollution Prevention Plan
U.S.	United States
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WQC	Section 401 Water Quality Certification

1.0 Introduction

On behalf of Bedford Marketplace, LLC (Applicant), Carlson Strategic Land Solutions (SLS) prepared this Biological Technical Report for the proposed Bedford Marketplace Project (Project) located on approximately 18 acres in the City of Corona. The Biological Technical Report for the approximately 18-acre Project site and the surrounding 500-feet, collectively known as the "Study Area," incorporates the findings from field surveys conducted on June 27, 2019; and a total of four focused Burrowing Owl Surveys conducted in June, July, and August 2019 (Appendix A).

1.1 Purpose and Approach

This report provides a summary of the conditions present during the 2019 field surveys, an assessment of the potential presence of sensitive biological resources, an analysis of the potential impacts to those resources due to Project implementation, and proposed mitigation. This report describes the current biological resources present within the Study Area including habitat communities, jurisdictional waters, and the potential occurrence of listed and special status plant and wildlife species. The potential biological significance of site construction and development in view of federal, state, and local laws and regulations are also identified in this report. The report also recommends, as appropriate, Best Management Practices (BMPs) and avoidance and minimization measures to reduce or avoid potential impacts. While general biological resources are discussed, the focus of this assessment is on those resources considered to be sensitive. This report was prepared based upon results of a literature review and field surveys.

1.2 Project Terms

The following terms will be used throughout this document and are defined as follows:

- Project site: the approximately 18-acre Bedford Marketplace Project site.
- Study Area: the area evaluated during the field survey, including the approximately 18-acre Project site and the surrounding 500-feet area.
- Project Vicinity: intended to be a general term to describe the broader area surrounding the Study Area.

1.3 Project Location

The Project Site is located in the Bedford Canyon area of the Santa Ana Mountain foothills in the southeastern portion of Corona. The City of Corona is generally situated southwest of the City of Riverside, south of the City of Norco, and north of the City of Lake Elsinore in Riverside County, California (Figure 1). Areas surrounding the Project Site include the I-15 freeway to the east, Arantine Hills Specific Plan to the south and west; and Cajalco Road to the north (Figure 2). The

Project Site is located within the United States Geological Survey (USGS) 7.5-Minute Topographic Map *Corona South* Quadrangle.

The Project Site is owned by the Riverside County Transportation Commission and has Assessor's Parcel Numbers (APN) 279-240-033 and 279-240-019.

Access to the Project site is from the residential project referred to as Bedford, located to the west of the Project site, off Eagle Glen Parkway via Hudson House Drive. Directions to the Project site from Interstate 15 (I-15) is to exit Cajalco Road and head west onto Eagle Glen Parkway. Access is obtained via Hudson House Drive.

1.4 Existing and Historical Land Use

The overall Study Area has historically been farmed for citrus production between 1962 and 2007. Prior to the 1962 aerial photograph, the Project Site was vacant land. The former agricultural operation has reverted to ruderal vegetation. The Project site is located between the new residential community of Bedford within the Arantine Hills Specific Plan (AHSP), which has been graded, and the I-15 freeway, including the Cajalco Interchange, which is currently under construction.

Bedford Canyon Wash, located to the south of the Project Site, is an ephemeral wash with a sandy bottom and sparsely vegetated alluvial fan sage scrub and non-native vegetation. The Wash receives flows from the Santa Ana mountains, through the Eagle Glen Golf Club, through the AHSP area, continuing downstream to Temescal Creek and ultimately the Santa Ana River. As part of implementation of the AHSP, Bedford Wash has been widened and improved with buried rip-rap along the banks and buried grade control structures to control erosion and scour. Two concrete crossings (upstream and downstream) provide access to the south side of the Wash and the associated maintenance access road. Restoration of Bedford Wash includes planting with an alluvial fan sage scrub seed mix.

2.0 Project Description

The intent of the Project is to incorporate the approximate 18 acres into the existing Arantine Hills Specific Plan (AHSP) and build a new commercial center. The Project site, currently owned by the Riverside County Transportation Commission (RCTC), would increase the size of the planned commercial center within the Arantine Hills Specific Plan.

The Applicant proposes to amend the Arantine Hills Specific Plan (AHSP Amendment No. 3) to increase the boundary of the AHSP by approximately 18 acres (Project Site). The proposal would also increase the area designated Commercial in the AHSP to approximately 22 acres and increase the amount of commercial use from 80,000 square feet to approximately 134,378 square feet plus a 135-room hotel.

Project implementation includes two alternatives for construction and the importing of dirt for grading operations.

Import Alternative 1: The first option to import dirt onsite is by truck from an off-site source. A potential source of import (Borrow Site) has been identified from the FST Sand and Gravel Mine, located east of I-15 and approximately ½ mile east of El Cerrito Road. The dirt would be hauled from the Borrow Site to the Project site.

Import Alternative 2: The second option to import dirt to onsite involves importing dirt from Planning Area 14 (PA 14) within the Arantine Hills Specific Plan (AHSP). PA 14, approximately 26 acres, is located south of Bedford Canyon Wash and forms an elevated plateau above Bedford Canyon Wash.

To import dirt from PA 14, an access ramp would be graded in the northeast portion of PA 14 leading down to the existing concrete crossing of Bedford Canyon Wash. Grading the access ramp would require creating a notch in the existing bluff with side slopes. The lower portion of the access ramp would be steeper and reinforced with geo-grid or similar stabilizer. Fill, ranging from 5 feet to 10 feet would be temporarily placed on top of the existing concrete pad crossing Bedford Canyon Wash to both protect the concrete pad and function as a ramp to gain elevation.

Careful grading operations and BMPs would avoid dirt spoils in Bedford Wash. While this import operation would need to take place during the dry season, temporary pipe culverts would be placed on top of the concrete pad under the dirt ramp in case unexpected monsoonal storms caused Bedford Canyon Wash to flow.

Following completion of the import, the temporary dirt bridge and culverts would be removed from the concrete pad crossing Bedford Canyon Wash and the notch in the bluff for the access ramp would be reconstructed at 2:1 slopes and surface terrace drains would be added to control storm runoff to minimize erosion. The graded slopes would be replanted with a native coastal sage scrub mix.

3.0 Regulatory Context

The following is a list of the key local, state, and federal laws and regulations that apply to protecting plant communities, plants, wildlife, and water quality from project impacts relevant to the Project.

3.1 Federal Laws and Regulations

- Federal Endangered Species Act (FESA)
- Federal Clean Water Act (CWA)
- Migratory Bird Treaty Act (MBTA)

3.2 California State Laws and Regulations

- California Environmental Quality Act (CEQA)
- California Endangered Species Act (CESA) and Fish and Game Code (FGC) sections 2050 et seq.
- Lake and Streambed Alteration Program – FGC sections 1600-1616
- Porter-Cologne Water Quality Act – California Code, Division 7
- Migratory Birds – FGC section 3513
- Nongame Birds – FGC section 3800 (a)
- Native Plant Protection Act (NPPA) – FGC sections 1900-1913

3.3 Local Plans/Regulations

- City of Corona General Plan
- Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP): Temescal Canyon Area Plan

3.4 Regulatory Permits

This report is prepared pursuant to and in support of CEQA, and any applicable regulatory permit applications, including the California Department of Fish and Wildlife (CDFW) Streambed Alteration Agreement (SAA), Regional Water Quality Control Board (RWQCB) Section 401 Water Quality Certification (WQC), United States Army Corps of Engineers (Corps) Section 404 permit, and United States Fish and Wildlife Service Section 7 Biological Opinion.

4.0 Survey and Methods

Preparation for this biological study began with a review of relevant available literature and review of historical biological documentation. This effort was followed by an onsite field survey on June 27, 2019. The purpose of the field survey was to assess the existing habitat, map any onsite sensitive plant communities and jurisdictional waters, and determine whether special status plant and wildlife species occur or potentially occur within the Study Area.

4.1 Literature Review

The study began with a review of relevant available literature on the biological resources within the Study Area and Project Vicinity. The Project site is located within the boundary of the Western Riverside MSHCP, specifically within the Temescal Canyon Area Plan.

4.1.1 Sensitive Plant Communities

Sensitive plant communities (sensitive habitats) are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects. Sensitive habitats are often threatened with local extirpation and are therefore considered valuable biological resources. Plant communities are considered “sensitive” by the California Native Plant Society (CNPS) and CDFW if they meet any of the criteria listed below.

- The habitat is recognized and considered sensitive by CDFW, United States Fish and Wildlife Service (USFWS), and/or special interest groups such as CNPS.
- The habitat is under the jurisdiction of the Corps pursuant to Section 404 of the CWA.
- The habitat is under the jurisdiction of the CDFW pursuant to Sections 1600 through 1612 of the California Fish and Game Code.
- The habitat is known or believed to be of high priority for inventory in the California Natural Diversity Database (CNDDB).
- The habitat is considered regionally rare.
- The habitat has undergone a large-scale reduction due to increased encroachment and development.
- The habitat supports special status plant and/or wildlife species (defined below).
- The habitat functions as an important corridor for wildlife movement.

4.1.2 Critical Habitat

Under the ESA, the federal government is required to designate "critical habitat" for any species it lists under the ESA. Federal agencies are prohibited from authorizing, funding or carrying out actions that "destroy or adversely modify" critical habitats. Section 3 of the ESA defines critical habitat as:

- The specific areas within the geographic area occupied by a species, at the time it is listed in accordance with the ESA, on which are found those physical or biological features essential to the conservation of the species and that may require special management considerations or protection.

- The specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

"Conservation" means the use of all methods and procedures that are necessary to bring an endangered or a threatened species to the point at which listing under the ESA is no longer necessary. Critical habitat receives protection under Section 7(a)(2) of the ESA through the prohibition against destruction or adverse modification of critical habitat with regard to actions carried out, funded, or authorized by a federal agency. Section 7(a)(2) also requires conferences on federal actions that are likely to result in the destruction or adverse modification of proposed critical habitat.

The USFWS's online service for information regarding Threatened and Endangered Species Final Critical Habitat designation within California was reviewed to determine if the Study Area is within any species' designated Critical Habitat (USFWS 2019a). The USFWS regulatory mapping process for the designation of critical habitat is an imprecise, broad-based, mapping exercise of areas that may or may not include constituent elements of the critical habitat designation. Due to this approach in mapping, large areas are designated as critical habitat regardless of the existing habitat, and as a result may include developed areas, such as buildings, roads, hardscape, and other such facilities, as well as natural habitats.

The constituent elements of the critical habitat designation consider the physical and biological features needed for life processes and successful reproduction of the listed species, including:

- Space for individual and population growth for normal behavior;
- Habitat cover or shelter;
- Food, water, or other nutritional or physiological requirements;
- Sites for breeding and rearing offspring; and
- Habitat that is protected from disturbance or is representative of the historical geographic and ecological distribution of a species.

4.1.3 Special Status Plants and Wildlife

Species of plants and animals are afforded "special status" by federal agencies, state agencies, and/or non-governmental organizations (e.g., USFWS, CDFW, and USFS, and CDF) because of their recognized rarity, potential vulnerability to extinction, and local importance. These species typically have a limited geographic range and/or limited habitat and are referred to collectively as "special status" species. Plant and wildlife species are considered "special status" species if they meet any of the following criteria.

- Taxa with official status under ESA, CESA, and/or the NPPA.
- Taxa proposed for listing under ESA and/or CESA.
- Taxa designated a species of special concern by CDFW.
- Taxa designated a state fully protected species by CDFW.

- Taxa identified as sensitive, unique or rare, by the USFWS, CDFW, the United States Forest Service (USFS), the United States Bureau of Land Management (BLM), and/or the California Department of Forestry and Fire Protection (CDF).
- Plants that meet the definition of rare or endangered under CEQA §15380(b) and (d). Species that may meet the definition of rare or endangered include the following:
    - Species considered by CNPS and CDFW to be "rare, threatened or endangered in California" (California Rare Plant Rank [CRPR] 1A, 1B and 2) (CNPS 2018). A majority of the CRPR 3 and CRPR 4 plant species generally do not qualify for protection under CESA and NPPA.
    - Species that may warrant consideration on the basis of local significance or recent biological information.
    - Some species included on the CNDDB Special Plants, Bryophytes, and Lichens List (CDFW 2019g).
- Considered a locally significant species, that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA §15125 (c)) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include a species at the outer limits of its known range or a species occurring on an uncommon soil type.

Available literature and databases were reviewed regarding sensitive habitats and special status plant and wildlife species. Special status plant and wildlife species that have the potential to occur within the immediate region of the Study Area were identified. Several agencies, including the USFWS, CDFW, and CNPS publish lists of particular taxa (species and subspecies) and the associated level of protection or concern associated with each. Reviewed and consulted literature and databases focused on the Study Area, and included the following sources listed below:

- The CNDDB, a CDFW species account database that inventories status and locations of rare plants and wildlife in California, was used to identify any sensitive plant communities and special status plants and wildlife that may exist within a two-mile radius of the Project site. A CNDDB search was performed by assessing a two-mile radius around the Study Area (CDFW 2019f). CNDDB records are generally used as a starting point when determining what special status species, if any, may occur in a particular area. However, these records may be old, lack data not yet entered, and do not represent all the special status species that could be in that particular area (Figure 3).
- A map of USFWS critical habitat to determine species with critical habitat mapped in the general vicinity of the Project (Figure 4) (USFWS 2019a).
- Online CNPS Inventory of Rare and Endangered Plants of California (CNPS 2019). A search for the USGS 7.5-Minute Topographic Map Corona South Quadrangle provided information regarding the distribution and habitats of special status vascular plants in the Project Vicinity.
- Pertinent maps, scientific literature, websites, and regional flora and fauna field guides.

The literature review was used as a resource to better understand the biological resources potentially occurring within the Study Area. Although the inventory list of special status plant and wildlife species was not exhaustive of all species that might occur on the property, it provides a wide range of species that are representative of the wildland habitats in the area. Species occurrence and distribution information is based on documented occurrences where surveys have taken place for individual projects; therefore, a lack of documented occurrence does not necessarily indicate that a given species is absent from the Study Area.

4.1.4 Jurisdictional Waters

The following sources were reviewed to determine the potential presence or absence of jurisdictional streams/drainages, wetlands, and their location within the watersheds associated with the Study Area, and other features that might contribute to federal or state jurisdictional authority located within watersheds associated with the Study Area:

- National Wetlands Inventory (NWI) maps (USFWS 2019c). The NWI database indicates potential wetland areas based on changes in vegetation patterns as observed from satellite imagery. This database is used as a preliminary indicator of wetland habitats because the satellite data are not precise.
- Title 33 Code of Federal Register (CFR): Navigation and Navigable Waters Part 328
- USGS National Hydrography Dataset (NHD). Provides the locations of "blue-line" streams as mapped on 7.5-Minute Topographic Map coverage.
- Aerial Imagery (Google Earth©) (Google 2019).
- USGS 7.5-Minute Topographic Maps.
- Natural Resource Conservation Service (NRCS) Soil Survey.

4.1.5 MSHCP Assessment

The Project site is located within the MSHCP, specifically within the Temescal Canyon Area Plan. The MSHCP is a comprehensive plan that includes portions of the County of Riverside and numerous cities. The MSHCP plans for conservation of 146 species and proposes a reserve system of approximately 500,000 acres. The MSHCP is intended to contribute to the economic viability of the County of Riverside by providing landowners, developers, and public infrastructure projects a streamlined regulatory process.

The Riverside Conservation Authority (RCA) MSHCP Information Application website was reviewed to verify any overlays that may occur on the Project site. Regardless of other overlays, MSHCP Section 6.1.2, *Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools*, is applicable to all projects within the MSHCP and describes the process through which protection of riparian/riverine areas, and vernal pools will occur within the MSHCP Area. Protection of these resources is important for a number of MSHCP conservation objectives. An assessment of a Project's potentially significant effects on riparian/riverine areas and vernal pools is required. Guidelines for determining whether or not these resources exist on site are described as follows:

- **Riparian/Riverine Areas** include "lands which contain habitat dominated by trees, shrubs, persistent emergents, or emergent mosses and lichens which occur close to or which depend upon soil moisture from a nearby fresh water source or areas with fresh water flow during all or a portion of the year." Riparian/riverine areas under the MSHCP also include drainage areas that are vegetated or have upland (non-riparian/riverine) vegetation and that drain directly into an area that is described for conservation under the MSHCP (or areas already conserved). The Project site was assessed for areas meeting this definition during the jurisdictional delineation performed on June 27, 2019.

- **Vernal Pools** are described by the MSHCP as "seasonal wetlands that occur in depression areas that have wetlands indicators of all three parameters (soils, vegetation, and hydrology) during the wetter portion of the growing season but normally lack wetlands indicators of hydrology and/or vegetation during the drier portion of the growing season." This definition excludes artificially created wetlands created for proving wetlands habitat or human actions to create open waters or altering natural streams demonstrating characteristic as described above. The Project site was assessed for areas meeting this definition during the jurisdictional delineation performed on June 27, 2019.

4.2 Biological Survey

4.2.1 General Biological Survey

A field survey was performed on June 27, 2019 by SLS biologist Brianna Bernard to assess and map vegetation communities, plants, and wildlife, and to identify habitat areas that could be suitable for special status plant species.

Plant species were identified using plant field and taxonomical guides, such as The Jepson Manual: Vascular Plants of California, second edition (Baldwin et al. 2012). All plant species encountered during the field survey were identified and recorded in field notes. A one-day survey cannot be used to conclusively determine presence or absence of a species; therefore, assessments of presence/absence were made based on the previous surveys, presence of suitable habitat and soils to support the species, known records or occurrence within the area, and known distribution and elevation range obtained from the relevant literature.

During the field survey, the biologist assessed the existing habitat within the Study Area using aerial maps and a Trimble R1 GNSS Receiver paired with the ARC Geographical Information System (ARCGIS) Collector Application. The biologist paid special attention to those habitat areas that had the potential to provide suitable habitat for special status plant and wildlife species. Aerial photographs and maps were used to assist in the delineation of plant community boundaries. Following field mapping, the plant communities were digitized, and the vegetation map was created. General wildlife surveys were conducted on foot and with binoculars within the Study Area.

All wildlife species encountered visually or audibly during the field survey were identified and recorded in field notes. Biologists also recorded signs of wildlife species including animal tracks,

burrows, nests, scat, and remains. Binoculars were used to aid in the identification of observed wildlife. Wildlife field guides and photographs were used to assist with identification of wildlife species during the field survey, as necessary. Photographs were taken to document existing conditions within the Study Area (Appendix B).

4.3 Focused Burrowing Owl Survey

The Project site falls within a MSHCP Burrowing Owl (BUOW) overlay (Figure 4). A Habitat Assessment was conducted on June 27, 2019 to determine any suitable BUOW habitat onsite. Following the assessment, a series of Focused Burrowing Owl surveys were conducted on July 8, July 25, and August 1, 2019 pursuant to MSHCP Section 6.3.2, MSHCP Protocol Survey Instructions, and the methods used to detect and identify BUOW included observation of key signs identified by the *California Burrowing Owl Consortium (CBOC).* This includes observation of key signs such as sight, scat, tracks, burrows, nests, and calls. All encountered burrows or structure entrances were checked for the presence of BUOWs, molted feathers, cast pellets, prey remains, eggshell fragments, tracks, or excrement at or near a burrow entrance. Natural or man-made structures that could support BUOWs were also surveyed when present. The complete results for the Protocol Focused BUOW Report can be found in Appendix A.

Each of the survey efforts were conducted in the morning between 7:15 a.m. and 11:50 a.m. and were not performed during periods of excessive or abnormal heat, wind, rain, or other inclement weather. The Study Area was assessed for the suitability to support burrowing owls and all suitable burrows were inspected for signs of use by burrowing owls. The survey involved walking through suitable habitat within the Study Area (the Project site and a 500-foot buffer). The pedestrian survey transects were spaced approximately 10 to 15 meters apart to allow 100 percent visual coverage of the ground surface.

4.4 Jurisdictional Delineation

An assessment of the Study Area for the presence of jurisdictional features was conducted by SLS biologist Brianna Bernard on June 27, 2019. All depressions and drainages were evaluated for the presence of jurisdictional waters and wetlands according to the Corps and CDFW delineation guidelines, including connectivity or lack of connectivity to Traditional Navigable Waters. Dominant vegetation within and adjacent to the jurisdictional features within the Study Area was identified and recorded.

The Corps and the RWQCB have jurisdiction over Waters of the United States. Jurisdictional non-wetland features for the Waters of the United States are typically determined through the observation of an Ordinary High Water Mark (OHWM), which is defined as the “line on the shore established by the fluctuation of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider

the characteristics of the surrounding areas." Projects with impacts to Waters of the United States are regulated under Sections 401 and 404 of the Clean Water Act.

To determine the presence of a jurisdictional wetland for the Waters of the United States, three indicators are required: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. The methodology published in the *United States Army Corps of Engineers 1987 Wetland Delineation Manual* and the *Arid West Supplement* sets the standards for meeting each of the three indicators, which normally require more than 50 percent cover of dominant plant species typical of a wetland, soils exhibiting characteristics of saturation, and hydrological indicators be present.

CDFW has jurisdiction over water of the Department's interest (California Fish and Game Code §§1600 et seq.; California Code of Regulations, Title 14, §720). Section 1602 of the California Fish and Game Code (FGC) applies to all rivers, streams, lakes and streambeds. CDFW defines a stream as "a body of water that flows perennially or episodically and that is defined by the area in which water currently flows, or has flowed, over a given course during the historic hydrologic course regime, and where the width of its course can reasonably be identified by physical or biological indicators" (Brady and Vyverberg 2013). Likewise, CDFW regulates jurisdictional areas of riparian habitat only to the extent that those areas are part of a stream, river, or lake as defined above. Waters of the State pertaining to Porter-Cologne in relation to RWQCB jurisdiction are defined by California Water Code Section 13050(e) as any surface or ground water within the boundaries of the state.

Prior to the field investigation, SLS biologist reviewed adjacent project biological reports, historical aerial imagery and topography for the Study Area to determine the potential for perennial, intermittent, or ephemeral drainages and associated riparian resources. Generally, indicators of jurisdictional drainages on an aerial photo include vegetation and/or incised lines indicating the path of flowing water. Following the desktop research, SLS biologist conducted an onsite field investigation. Based on the collective results of the desktop investigation and the field surveys, any observed jurisdictional features were mapped using the following parameters:

- The limits of the Corps' jurisdiction extend to the OHWM. OHWM indicators include: the observation of benches, break in bank slope, particle size distribution, sediment deposits, drift, litter, and/or change in plant community.
- The RWQCB shares the Corps' jurisdictional methodology.
- CDFW's jurisdiction applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the state. CDFW's authority also includes riparian habitat (including wetlands) supported by a river, stream, or lake regardless of the presence or absence of hydric soils and saturated soil conditions. Generally, CDFW jurisdiction is mapped to the top of bank of the stream.

5.0 Results

5.1 Vegetation Communities

The vegetation communities and habitat conditions were inspected to confirm presence and habitat quality of the vegetation found onsite. Vegetation communities were mapped based on the Holland Classification System (Holland 1986). Where necessary, deviations were made on best professional judgment when areas did not fit into a specific habitat description provided by Holland. Plant communities were mapped in the field directly onto a 200-scale (1" = 200') aerial photograph and a Trimble R1 GNSS Receiver paired with the ARCGIS Collector Application was utilized during the survey. Biologists confirmed the presence and general quality of the four vegetation communities. Vegetation mapping and acreages for each vegetation community is based on the observations of the field surveys, which are listed below in Table 1 and graphically depicted on Figure 5. Representative photographs of the vegetation communities can be found in Appendix B.

The deviations from Holland include the Disturbed/Developed and the Widened and Restored Wash categories. The deviations for the Developed community was made because of the lack of, or limited habitat values, and includes non-native or invasive species. The deviations for the Widened and Restored Wash community was made because installation of riprap bank protection, grade stabilizers, concrete crossings, and associated ramps deviate from a natural wash classification. This was a result of implementation of the adjacent Arantine Hills Project and impacts were previously accounted for and permits obtained for Arantine Hills implementation. While Bedford Wash currently exhibits limited habitat value, the area is to be seeded with Alluvial Fan Sage Scrub and maintained in perpetuity per the Arantine Hills Long-Term Management Plan.

The field survey included a 500-foot buffer around the Project site to determine what vegetation types exist adjacent to the Project site in order to determine the potential significance of indirect impacts. As shown on Figure 5, the surrounding 500-foot buffer consists primarily of developed/disturbed vegetation community including; Interstate-15, Eagle Glen Road, graded and disturbed land within the Arantine Hills Project. A small portion of the 500-foot buffer area includes the Widened and Restored Bedford Canyon Wash.

Table 1. Vegetation Community Observed within the Project Site[1]

Vegetation Community	Acreage within in the Project Site (acres)
Riversidian Sage Scrub/Chaparral	0.15
Widened and Restored Bedford Canyon Wash[2]	0.20
Ruderal	15.14
Disturbed/Developed	2.28
TOTAL	**17.77**

***Notes**:*
1. Acreages presented in the table represent those found within the Project Boundary. The surrounding 500-foot buffer consists primarily of developed/disturbed vegetation community including; Interstate-15, Eagle Glen Road, graded and disturbed land within the Arantine Hills Project.
2. Included within the Arantine Hills Project, Widened and Restored Wash design. Specifically, the portion of the Widened and Restored Wash within the Project Boundary includes concrete ramps entering and exiting the Wash, buried riprap slope protections, and concrete Wash crossing and grade stablization.

The general description of the habitat observed during the 2019 field survey is described below.

5.1.1 Riversidian Sage Scrub/Chaparral

Approximately 0.15 acres of the Project site is comprised of Riversidian Sage Scrub/Chaparral. This vegetation community is located on the slope of the south bluff of Bedford Canyon Wash. The Riversidean Sage Scrub/Chaparral community is dominated by shrubs such as laurel sumac (*Malosma laurina*), white sage (Salvia apiana), toyon (*Heteromeles arbutifolia*), Mexican elderberry (*Sambucus mexicana*), California sagebrush (*Artemisia californica*), black sage (*Salvia mellifera*), deerweed (*Acmispon glaber*), California buckwheat (*Eriogonum fasciculatum*), chamise (*Adenostoma fasciculatum*), and tree tobacco (*Nicotiana glauca*). The understory of the community consists primarily of non-native species such as red brome (*Bromus madritensis ssp. rubens*), ripgut brome (*Bromus diandrus*), tocalote (*Centaurea melitensis*), and summer mustard (*Hirschfeldia incana*).

5.1.2 Widened and Restored Wash

Approximately 0.20 acres of the Project site is comprised of widened and restored Bedford Canyon Wash (Wash). The original Wash was widened from an approximately 90 feet to 200 feet. Various structures, including buried slope protection, buried grade control structures, and access ramps, are included within the design. The overall restored Wash will be hydroseeded with an alluvial fan sage scrub hydroseed mixture. Specifically, the portion of the Widened and Restored Wash within the Project Boundary includes concrete ramps entering and exiting the Wash, buried riprap slope protections, and the concrete Wash crossing and grade stabilization.

5.1.3 Ruderal

A total of 15.14 acres of the Project site consists of the ruderal community. This vegetation community occurs in the location of the historical citrus operations. It is generally maintained (trimmed) annually due to fire management. Vegetation within this area is comprised of

predominantly of cheeseweed (*Malva parviflora*). Other species include Russian thistle (*Salsola tragus*), summer mustard (*Hirschfeldia incana*), rat-tail fescue (*Festuca microstachys*), foxtail brome (*Bromus madritensis ssp. rubens*), ripgut brome (*Bromus diandrus*), tocalote (*Centaurea melitensis*), Jimson weed (*Datura stramonium*), giant reed (*Arundo donax*), and a few scattered coyote bush (*Baccharis pilularis*), and laurel sumac (*Malosma laurina*).

5.1.4 Developed/Disturbed

A total of 2.28 acres of disturbed area consisting of bare dirt, dirt roads, and sparse vegetation is mapped onsite. The developed/disturbed community contains limited habitat value and includes non-native or invasive species. This community also includes areas of disturbance from both the grading of Arantine Hills and the construction of the Cajalco Interchange.

5.2 Plants

Sensitive plant species include federal or state listed threatened or endangered species, those species listed on the CNPS rare and endangered plant inventory. A single listed plant species occurs within the USGS 7.5' Corona South quadrangle and a brief description of that species is included below. Special status plant species with the potential to occur in the Project site were analyzed based on distribution, habitat requirements, and existing site conditions (Appendix C). All plant species observed within the Project site totaled 22 species during the survey on June 27, 2019 are listed in Appendix D of this report.

Brand's Phacelia (*Phacelia stellaris*)
Status: California Rare Plant Rank 1B.1
Distribution: Orange, Riverside, San Bernardino, and San Diego Counties.
Habitat(s): Habitats supporting coastal scrub and coastal dunes. Known from 1 to 400 meters (3 to 1,300 feet) MSL. Blooms March through June.
Status onsite: None. The site lacks suitable habitat and soils. Not observed during field visit.

Munz's Onion (*Allium munzii*)
Status: state threatened, federally endangered
Distribution: Los Angeles, Riverside, San Bernardino, and San Diego Counties.
Habitat(s): Clay soils supporting chaparral, cismontane woodland, coastal scrub, pinyon-juniper woodland, and valley and foothill grassland. Known from 300 to 1,070 meters (1,000 to 3,500 feet) MSL. Blooms March through May.
Status onsite: None. The site lacks suitable habitat and soils. Not observed during field visit.

San Diego ambrosia (*Ambrosia pumila*)
Status: federally endangered
Distribution: Riverside County and San Diego Counties.
Habitat(s): Found along drainages and areas adjacent to riparian areas. Nearest location is San Luis Rey. Blooms June through September.

Status onsite: Clay or sandy loam soils supporting chaparral, costal scrub valley and foothill grassland and vernal pools. Known from 20 to 415 meters (65 to 1,300 feet) MSL. Blooms April through October. Not observed during field visit.

San Miguel Savory (*Satureja chandleri*)
Status: California Rare Plant Rank 1B.2
Distribution: Los Angeles, Riverside, San Bernardino, and San Diego Counties.
Habitat(s): Rocky, gabbroic, or metavolcanic soils supporting chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland. Known from 120 to 1,075 meters (390 to 3,500 feet) MSL. Blooms March through July.
Status onsite: None. The site lacks suitable habitat and soils. Not observed during field visit.

As determined through the 2019 survey, no special status plant species were observed within the Study Area and there is no opportunity for them to occur due to the disturbed and developed area onsite. Furthermore, the Study Area lacks suitable habitat and soils.

5.3 Critical Habitat

The USFWS's online service for information regarding Threatened and Endangered Species Final Critical Habitat designation within California was reviewed to determine if the Project site is within any species' designated Critical Habitat. The Project site and Buffer Area do not contain a designated Critical Habitat overlay. The closest designated Critical Habitat is located approximately 0.01 mile south for the coastal California gnatcatcher (*Polioptila californica californica* [CAGN]) (Figure 4).

5.4 Wildlife

Special status wildlife species with the potential to occur on the Project site were analyzed based on the species identified in USGS 7.5' Corona South quadrangle and the surrounding eight quadrangles, distribution, habitat requirements, and existing site conditions (Appendix E). No special status wildlife was identified or observed within the Project site during the field visit. However, the following species were listed through the CNDDB as being observed within 2-miles of the Project site: California horned lark (*Eremophila alpestris actia*), coastal California gnatcatcher, coastal whiptail *(Aspidoscelis tigrus stejnegeri*), coast horned lizard (*Phrynosoma blainvillii*), least Bell's vireo (*Vireo bellii pusillus*), orange-throated whiptail (*Aspidoscelis hyperythra*), red-diamond rattlesnake (*Crotalus ruber*), Stephen's Kangaroo Rat (*Dipodomys stephensi*), southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), and western spadefoot (*Spea hammondii*). A brief description of those species and their habitat is included below.

California Horned Lark (*Eremophila alpestris actia*)
Status: CDFW watch list
Habitat(s): A year-long resident within the state and within a variety of open habitats, usually where trees and large shrubs are absent. They are not particular about the nature of the field, so long as it has very little vegetation. Range-wide, they breed in level or gently sloping short grass prairies, montane meadows, "bald" hills, open coastal plains, fallow grain fields, alkali flats, and rangelands. Within southern California, California horned larks breed primarily in open fields, (short) grasslands, and rangelands. Grasses, shrubs, forbs, rocks, litter, clods of soil, and other surface irregularities provide cover.
Status onsite: Moderate potential to occur onsite. Suitable habitat exists onsite due to the maintenance for fire abatement and bare areas, which results in areas with little to no vegetation. Observed during the field survey within the surrounding 500-feet buffer, however, was not observed onsite.

Coastal California gnatcatcher (*Polioptila californica californica*)
Status: federally threatened, CDFW species of special concern
Distribution: Southern Los Angeles, Orange, western Riverside, and San Diego counties south into Baja.
Habitat(s): Coastal sage scrub of varying subtypes, sometimes riparian, chaparral, and other habitats as well.
Status onsite: None. The site lacks suitable habitat. Not observed during field visit.

Coastal whiptail (*Aspidoscelis tigrus stejnegeri*)
Status: CDFW species of special concern
Habitat(s): This species is found in a variety of habitats, primarily hot and dry open areas with sparse vegetation including chaparral, woodland, and riparian areas. This subspecies is found in coastal southern California, north into Ventura County, and south into Baja California. Additional important habitat characteristics include Important habitat components include shrub cover with accumulated leaf litter, and an abundance of invertebrate prey, particularly termites.
Status onsite: None. The site lacks suitable habitat. Not observed during field visit.

Coast horned lizard (*Phrynosoma blainvillii*)
Status: CDFW species of special concern
Habitat(s): Occurs in a variety of vegetation types including coastal sage scrub, chaparral, annual grassland, oak woodland and riparian woodlands.
Status onsite: None. The site lacks suitable habitat. Not observed during field visit.

Least Bell's Vireo (*Vireo bellii pusillus*)
Status: federally endangered, state endangered
Habitat(s): This species primarily occupies riverine riparian habitats that typically feature dense cover within 1-2 m of the ground and a dense, stratified canopy. Typically, it is associated with southern willow scrub, cottonwood-willow forest, mule fat scrub, sycamore alluvial woodland, coast live oak riparian forest, arroyo willow riparian forest, or mesquite in desert localities. It uses habitat which is limited to the immediate vicinity of water courses.

Status onsite: None. The site lacks suitable habitat. Not observed during field visit.

Orange-Throated Whiptail (*Aspidoscelis hyperythra*)
Status: CDFW species of special concern
Habitat(s): The species is generally found in semi-arid brushy areas typically with loose soil and rocks, including washes, stream sides, rocky hillsides, and coastal chaparral. Habitat types include low elevational chaparral, non-native grassland, (Riversidian) coastal sage scrub, juniper woodland and oak woodland. Associations include alluvial fan scrub and riparian areas. Friable soil appears to be a necessary requirement for excavating burrows and hiding eggs.
Status onsite: None. The site lacks suitable habitat. Not observed during field visit.

Red-Diamond Rattlesnake (*Crotalus ruber*)
Status: species of special concern
Habitat(s): It can be found from the desert, through dense chaparral in the foothills (it avoids the mountains above around 4,000 feet), to warm inland mesas and valleys, all the way to the cool ocean shore. It is most commonly associated with heavy brush with large rocks or boulders. Dense chaparral in the foothills, cactus or boulder associated coastal sage scrub, oak and pine woodlands, and desert slope scrub associations are known to carry populations of the northern red-diamond rattlesnake, however, chamise and red shank associations may offer better structural habitat for refuges and food resources for this species than other habitats. They need rodent burrows, cracks in rocks or surface cover objects.
Status onsite: Limited habitat is found onsite due to the bare and disturbed areas with heavy brush found onsite, and maintenance for fire abatement. Not observed during field visit.

Stephen's Kangaroo Rat (*Dipodomys stephensi*)
Status: federally endangered, state threatened
Habitat(s): This species prefers large areas of disturbed or patchy annual and perennial grasslands and open coastal sage scrub. Preferred perennials plant species include buckwheat and chamise and preferred annual plant species include brome grass. The nearest known populations are in Rancho Guejito and at the Naval Weapons Station in Fallbrook.
Status onsite: None. The site lacks suitable habitat. Not observed during field visit.

Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)
Status: CDFW watch list
Habitat(s): They are found on grass-covered hillsides, coastal sage scrub, and chaparral and often occur near the edges of the denser scrub and chaparral associations. Preference is shown for tracts of California sagebrush. Optimal habitat consists of sparse, low brush or grass, hilly slopes preferably interspersed with boulders and outcrops. The species may occur on steep grassy slopes without shrubs if rock outcrops are present. It is a very secretive species.
Status onsite: None. The site lacks suitable habitat. Not observed during field visit.

Western Spadefoot (*Spea hammondii*)
Status: CDFW species of special concern
Habitat(s): May be found in coastal sage scrub, open chaparral, pine-oak woodlands and grassland habitats, but is most common in grasslands with vernal pools or mixed grassland/coastal sage scrub areas. Within these habitats, they require rain pools/vernal pools in which to reproduce and that persist with more than three weeks of standing water in which to metamorphose successfully. They can also breed in slow-moving streams (e.g., areas flooded by intermittent streams). Water breeding sites must lack fish, bullfrogs, and crayfish in order for to successfully reproduce and metamorphose.
Status onsite: None. The site lacks suitable habitat. Not observed during field visit.

Summary of Sensitive Species
No special status species or evidence of their presence were observed or heard during the 2019 survey. Given the site's annual maintenance for fire abatement, existing surrounding uses (Arantine Hills Construction and I-15/Cajalco construction), and lack of habitat there is no opportunity for them to occur within the Study Area.

5.4.1 Wildlife Species Observed or Detected

The animal species or signs thereof observed during the SLS survey are listed below:

Birds:

- American crow (*Corvus brachyrhynchos*)
- Anna's hummingbird (*Calypte anna*)
- black phoebe (*Sayornis nigricans*)
- California quail (*Callipepla californica*)
- California towhee (*Melozone crissalis*)
- house finch (*Haemorhous mexicanus*)
- mourning dove (*Zenaida macroura*)
- red-tailed hawk (*Buteo jamaicensis*)
- song sparrow (*Melospiza melodia*)
- turkey vulture (*Cathartes aura*)
- California Horned Lark (*Eremophila alpestris actia*)
- western scrub jay (*Aphelocoma californica*)

Mammals:

- California ground squirrel (*Spermophilus beecheyi*)
- desert cottontail (*Sylvilagus audubonii*)

Reptiles:

- western fence lizard (*Sceloporus occidentalis*)

5.5 Focused Burrowing Owl Survey

Per the MSHCP BUOW Survey Instructions, a Habitat Assessment was conducted on June 27, 2019 to determine if any suitable BUOW habitat occurred onsite. Following the habitat assessment, three additional focused surveys took place on July 8, 25, and August 1, 2019 between 7:15 a.m. and 11:50 a.m. Temperatures during the survey ranged between 64° F and 95° F, with generally predominant sunny, clear skies and 0-2 mph winds. The surveys were conducted during typical BUOW peak activity time and was not conducted during rain, high winds (> 20 miles per hour), dense cloud cover >75%. Prior to the commencement of the survey, SLS biologist scanned the Study Area, consisting of the Project site and the surrounding 500-foot buffer, using binoculars to look for burrowing owl. The Study Area was assessed for the suitability to support burrowing owls and all suitable burrows were inspected for signs of use by burrowing owls. The surveys involved walking through suitable habitat within the Study Area. Pedestrian survey transects were spaced approximately 10 to 15 meters apart to allow 100 percent visual coverage of the ground surface.

No BUOWs or evidence of BUOWs were observed on site within the Study Area during the focused survey. A majority of the Project site was characterized by actively maintained ruderal fields, lacking necessary sized burrows to provide suitable nesting habitat for BUOW. Much of the buffer area is developed, with Arantine Hills to the west and I-15 to the east. California ground squirrels and their burrows were observed within the Study Area. These burrows were actively utilized by the California ground squirrels and contained no BUOW or keys signs (sight, whitewash, burrows, bones, feathers, pellets, nests, and calls). Furthermore, the Project site is maintained for fire abatement and the property adjacent to the Project site has active construction and grading activities including the I-15/Cajalco Interchange. Please refer to Appendix A for the complete results for the focused survey.

5.6 Regional Connectivity/Wildlife Movement

Wildlife corridors link together areas of suitable habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The fragmentation of open space areas by urbanization creates isolated “islands” of wildlife habitat. In the absence of habitat linkages that allow movement to adjoining open space areas, various studies have concluded that some wildlife species, especially the larger and more mobile mammals, would not likely persist over time in fragmented or isolated habitat areas because they prohibit the infusion of new individuals and genetic information (MacArthur and Wilson 1967, Soule 1987, Harris and Gallager 1989). Corridors effectively act as links between different populations of a species. A group of smaller populations (termed “demes”) linked together via a system of corridors is termed a “meta-population.” The long-term health of each deme within the meta-population is dependent upon its size and the frequency of interchange of individuals (immigration versus emigration). The smaller the deme, the more important immigration becomes, because prolonged inbreeding with the same individuals can reduce genetic variability. Immigrant individuals that move into the deme from adjoining demes mate with individuals and supply that deme with new genes and

gene combinations that increases overall genetic diversity. An increase in a population's genetic variability is generally associated with an increase in a population's health.

Corridors mitigate the effects of habitat fragmentation by:

- Allowing animals to move between remaining habitats, which allows depleted populations to be replenished and promotes genetic diversity.
- Providing escape routes from fire, predators, and human disturbances, thus reducing the risk that catastrophic events (such as fires or disease) will result in population or local species extinction.
- Serving as travel routes for individual animals as they move within their home ranges in search of food, water, mates, and other needs (Fahrig and Merriam 1985, Simberloff and Cox 1987, Harris and Gallagher 1989).

Wildlife movement activities usually fall into one of three movement categories:

- Dispersal (e.g., juvenile animals from natal areas, individuals extending range distributions).
- Seasonal migration.
- Movements related to home range activities (foraging for food or water, defending territories, searching for mates, breeding areas, or cover).

A number of terms have been used in various wildlife movement studies, such as "wildlife corridor," "travel route," "habitat linkage," and "wildlife crossing" to refer to areas in which wildlife moves from one area to another. To clarify the meaning of these terms and facilitate the discussion on wildlife movement in this study, these terms are defined as follows:

- Travel route: a landscape feature (such as a ridge line, drainage, canyon, or riparian strip) within a larger natural habitat area that is used frequently by animals to facilitate movement and provide access to necessary resources (e.g., water, food, cover, den sites). The travel route is generally preferred because it provides the least amount of topographic resistance in moving from one area to another; it contains adequate food, water, and/or cover while moving between habitat areas; and provides a relatively direct link between target habitat areas.

- Wildlife corridor: a piece of habitat, usually linear in nature, that connects two or more habitat patches that would otherwise be fragmented or isolated from one another. Wildlife corridors are usually bounded by urban land areas or other areas unsuitable for wildlife. The corridor generally contains suitable cover, food, and/or water to support species and facilitate movement while in the corridor. Larger, landscape-level corridors (often referred to as "habitat or landscape linkages") can provide both transitory and resident habitat for a variety of species.

- Wildlife crossing: a small, narrow area, relatively short in length and generally constricted in nature, that allows wildlife to pass under or through an obstacle or barrier that otherwise hinders or prevents movement. Crossings are typically manmade and include culverts, underpasses, drainage pipes, and tunnels to provide access across or under roads, highways, pipelines, or other physical obstacles. These are often "choke points" along a movement corridor.

5.6.1 Wildlife Movement within the Study Area

The Study Area may serve a function in local wildlife movement; however, the Study Area was not identified in the MSHCP as a Core Linkage, indicating a lack of importance for regional wildlife movement. Bedford Canyon Wash may provide a linkage for wildlife between the Cleveland National Forest and Lake Matthews. A recent restoration project proposed by the Riverside-Corona Resource Conservation District (RCRCD) for a downstream parcel within the Bedford Canyon Wash would, "Preserve the channel/floodplain location which historically functioned as part of a regionally significant east- west wildlife corridor," suggesting that this corridor provides a valuable linkage. Bedford Canyon Wash will not be impacted as part of the proposed project and continue to provide the opportunity for wildlife movement.

5.7 Jurisdictional Areas

5.7.1 Waters of the United States

This section relies on the term "Waters of the United States" as it applies to the jurisdictional limits under the authority of the Army Corps of Engineers under the Clean Water Act and applies to the jurisdiction of the Regional Water Quality Control Board under the Porter-Cologne Water Quality Act. Based on the methodology described in Section 4.4, both literature/data base review and a field delineation were conducted to determine the presence of Waters of the United States.

The only jurisdictional feature located on the Project Site is Bedford Canyon Wash, which is presented in Table 2 and shown on Figure 6.

As part of the implementation of the Arantine Hill Specific Plan, Bedford Canyon Wash has been widened and restored, including the placement of rip-rap bank protection, grade control structures, concrete crossings, and access ramps. Specifically, the portion of Bedford Wash within the Project Boundary includes concrete ramps entering and exiting the Wash, buried riprap slope protection, and a concrete Wash crossing that includes grade stabilization. Jurisdictional Waters of the U.S. extend from invert to invert.

Table 2. Jurisdictional Waters of the United States within the Project site

Drainage	Total Acreage
Bedford Canyon Wash	0.10[1]
[1]. Consists of non-wetland jurisdictional features.	

5.7.2 Waters of the State

The Project site includes Waters of the State that meet CDFW characteristics in accordance with FGC Section 1600 (Brady and Vyverberg 2013). The only Waters of the State jurisdictional feature located on the Project Site is Bedford Canyon Wash due to the presence of biological and physical characteristics of a stream subject to the Jurisdiction of CDFW under FGC §1600 et seq. The Wash exhibits biological and physical indicators of Waters of the State through the presence of channel bed and bank. The total inventory of Waters of the State is presented in Table 3 and shown on Figure 6.

As part of the implementation of the Arantine Hill Specific Plan, Bedford Canyon Wash has been widened and restored. Specifically, the portion of the Widened and Restored Wash within the Project Boundary includes concrete ramps entering and exiting the Wash, buried riprap slope protection, and the concrete Wash crossing. Jurisdictional Waters of the State extend from top of bank to top of bank.

Table 3. Jurisdictional Waters of the State within the Project Site

Drainage	Total Acreage
Bedford Canyon Wash	0.20[1]
[1]. Widened and Restored Wash.	

5.7.3 MSHCP Riparian/Riverine and Vernal Pool Assessment

Volume I, Section 6.1.2 of the MSHCP describes the process through which protection of riparian/riverine areas and vernal pools would occur within the MSHCP Plan Area. The purpose is to ensure that the biological functions and values of these areas throughout the MSHCP Plan Area are maintained such that habitat values for species inside the MSHCP Conservation Area are maintained. The MSHCP requires that as projects are proposed within the overall Plan Area, the effect of those projects on riparian/riverine areas and vernal pools must be addressed.

The MSHCP defines riparian/riverine areas as:

> *…lands which contain Habitat dominated by trees, shrubs, persistent emergent mosses and lichens, which occur close to or which depend upon soils moisture from a nearby fresh water source; or areas with fresh water flow during all or a portion of the year.*

The MSHCP defines vernal pools as:

> *…seasonal wetlands that occur in depression areas that have wetlands indicators of all three parameters (soils, vegetation, and hydrology) during the wetter portion of the growing season but normally lack wetland indictors of hydrology and/or vegetation during the drier portion of the growing season.*

With the exception of wetlands created for the purpose of providing wetlands habitat or resulting from human actions to create open waters or from the alteration of natural stream courses, areas demonstrating characteristics as described above which are artificially created are not included in these definitions.

The total inventory of MSHCP Riparian and Riverine is presented in Table 4 and shown on Figure 7. The Project site contains no vernal pools or depressions as defined under MSHCP vernal pool features.

As part of the implementation of the Arantine Hill Specific Plan, the acreage identified as Riparian/Riverine Habitat includes the widened and restored Bedford Wash. Specifically, the portion of the Widened and Restored Wash within the Project Boundary includes concrete ramps entering and exiting the Wash, buried riprap slope protection and a concrete Wash crossing that includes grade stabilization.

Table 4. Riparian/Riverine Habitat

Community Type	Acreage Onsite
Riparian/Riverine	0.20[1]
1. Widened and Restored Wash.	

5.8 MSHCP Assessment

The Project is located within the Temescal Canyon Area Plan of the MSHCP. The Project site is not located within any MSHCP Criteria Areas, Cell Groups, or Subunits. Furthermore, the Project site is not located in survey areas for Amphibians, Mammals, or Special Linkage areas. The Project site is located within the Narrow Endemic Plants Overlay (Survey Area Number 7) pursuant to MSHCP Section 6.1.3 and Western Burrowing Owl overlay pursuant to MSHCP Section 6.3.2. The Project site was surveyed and assessed for the following:

- Riparian and Riverine Areas (Section 6.1.2)
- Narrow Endemic Plants - Survey Area Number 7 (Section 6.1.3)
- Western Burrowing Owl Survey Area (Section 6.3.2)

Thus, a separate Consistency Assessment has been prepared pursuant to those sections.

5.9 Soils Mapping

The United States Department of Agriculture Natural Resources Conservation Service lists four soil types (series) for the Project Site (Figure 8). The following soil types are located on the Project site and described below.

AkC: Arbuckle loam, 2 to 8 percent slopes
Soils of the Arbuckle series consist of well-drained soils and have slopes of 2 to 25 percent. These soils occur on alluvial fans and developed in alluvium from metasedimentary rocks. Arbuckle soils are not designated as a sensitive soil type by the MSHCP.

AIC: Arbuckle gravelly loam, 2 to 8 percent slopes
Soils of the Arbuckle series consist of well-drained soils and have slopes of 2 to 25 percent. These soils occur on alluvial fans and developed in alluvium from metasedimentary rocks. Arbuckle soils are not designated as a sensitive soil type by the MSHCP.

AID: Arbuckle gravelly loam, 8 to 15 percent slopes
Soils of the Arbuckle series consist of well-drained soils and have slopes of 2 to 25 percent. These soils occur on alluvial fans and developed in alluvium from metasedimentary rocks. Arbuckle soils are not designated as a sensitive soil type by the MSHCP.

CmC: Cortina cobbly loamy sand, 2 to 8 percent slopes
The Cortina series consists of somewhat excessively drained and excessively drained soils on alluvial fans and in valley fills. These soils formed in alluvium from metasedimentary rocks. Cortina soils are not designated as a sensitive soil type by the MSHCP.

GdC: Garretson gravelly very fine sandy loam, 2 to 8 percent slope
The Garretson series consists of well-drained soils on alluvial fans. These soils formed in alluvium made up chiefly of metasedimentary materials. Garretson soils are not designated as a sensitive soil type by the MSHCP. Garretson soils are mapped within the several areas within the Project Study Area.

SuF2: Soper cobbly loam, 25 to 50 percent slopes, eroded
The Soper series consists of moderately deep well drained soils that formed in material weathered from conglomerate and sandstone. Soper soils are on hills and uplands and have slopes of 15 to 50 percent. The mean annual precipitation is about 18 inches and the mean annual air temperature is about 60 degrees Fahrenheit. These soils are mapped in the southern most portion of the Project Boundary.

TeG: Terrace Escarpments
Terrace escarpments consist of variable alluvium on terraces and barrancas. Small areas of recently deposited alluvium may be near the bottom of the escarpments. This land is unaltered alluvial outwash derived from granite, gabbro, metamorphosed sandstone, sandstone, or mica schist. Terrace escarpments are not designated as a sensitive soil type by the MSHCP.

6.0 Project Impacts

This section discusses potential impacts to biological resources that could result from Project implementation. Biological resources may be either directly or indirectly impacted by a Project. Direct and indirect impacts may be either permanent or temporary in nature. These impact categories are defined below.

- Direct impact: any loss, alteration, disturbance or destruction of biological resources that would result from project-related activities is a direct impact. Examples include vegetation clearing, encroaching into wetlands, diverting natural surface water flows, and the loss of individual species and/or their habitats. Direct permanent impacts resulting from Project implementation consist of any ground-disturbing activities (i.e., vegetation removal, grading, paving, building of structures, installing landscaping, creating the fuel modification zone, etc.).

- Indirect impact: as a result of Project-related activities, biological resources may also be affected in a manner that is not direct. Examples of indirect impacts include elevated noise, light, and dust levels, increased human activity, decreased water quality, erosion created by the removal of vegetation, and the introduction of invasive plants and unnatural predators (e.g. domestic cats and dogs). These indirect impacts may be both short term and long term in their extent.

- Permanent impacts: all impacts that result in the long-term or irreversible removal of biological resources are considered permanent. Examples include constructing a building or permanent road on an area containing biological resources.

- Temporary impacts: any impacts considered to have reversible effects on biological resources can be viewed as temporary. Examples include the generation of fugitive dust during grading or removing vegetation and either allowing the natural vegetation to recolonize or actively revegetating the impact area.

Under each section, potential impacts are discussed.

6.1 Impacts to Vegetation Communities/Habitats

Impacts are provided for both alternative methods regarding importing dirt to the site. Calculations were based on the currently proposed development design in combination with the vegetation map from the field survey and aerial imagery.

Indirect temporary impacts to plant communities include the effects of fugitive dust created by grading activities, vehicle construction traffic, or offsite discharge of surface water runoff with its associated erosion and sedimentation. Grading-related dust could settle on plant surfaces and indirectly inhibit metabolic processes such as photosynthesis and respiration. Grading-related

erosion, runoff, sedimentation, soil compaction, and alteration of drainage patterns may affect plants by altering site conditions so that the location in which they are growing becomes unfavorable. Another example of indirect impacts includes the introduction and spread of invasive, exotic plants which could result in permanent indirect impacts to adjacent native plant communities.

6.1.1 Total Project Impacts with Alternative 1: Off-site Dirt Import

Figure 9 and Table 5 describe and list the approximate total acreages of vegetation communities that will be permanently and temporary impacted by Project activities should Alternative 1 be implemented.

Table 5. Alternative 1: Off-site Dirt Import – On-Site Vegetation Community Impacts[1]

Vegetation Community	Existing Vegetation onsite (acres)	Total Permanent Impacts (acres)	Total Temporary Impacts (acres)	Avoided (acres)
Riversidian Sage Scrub/Chaparral	0.15	0.00	0.00	0.15
Widened and Restored Bedford Canyon Wash[2]	0.20	0.01	0.00	0.19
Ruderal	15.14	14.32	0.00	0.82
Disturbed/Developed	2.28	2.00	0.00	0.28
TOTAL	**17.77**	**16.33**	**0.00**	**1.44**

Notes:

1. Acreages presented in the table represent those found within the Project Boundary. The surrounding 500-foot buffer consists primarily of developed/disturbed vegetation community including; Interstate-15, Eagle Glen Road, graded and disturbed land within the Arantine Hills Project.

2. Included within the Arantine Hills Project, Widened and Restored Wash design. Specifically, the portions of the Widened and Restored Wash within the Project Boundary includes concrete ramps entering and exiting the Wash, buried riprap slope protection, and concrete Wash crossing.

Direct impacts to 16.33 acres on the Project site are not considered significant because the habitats are common in the Project Vicinity and have minimal habitat value. Furthermore, these impacts do not represent CNDDB, State, or MSHCP sensitive plant communities. In addition, many of these areas within the Study Area exhibit a moderate or high level of disturbance.

Of the total 16.33 acres impacted onsite, the 0.01 acre of impacts to Bedford Canyon Wash would occur within an area that was previously disturbed through authorization of Regulatory Permits for the widening and restoration of Bedford Canyon Wash and does not contain native vegetation. Therefore, no new impacts to jurisdictional waters would occur and no additional Regulatory Permits are required.

No direct impacts are expected to occur within the surrounding buffer area. Indirect impacts to the surrounding 500-foot buffer area could occur from construction activities, however impacts would be less than significant because no sensitive habitat or sensitive species are located within the Buffer Area, the habitats are common in the Project Vicinity; the area consists of

disturbed/developed vegetation communities; and construction BMP's such as compliance with air quality regulations would require frequent watering during construction activities to minimize dust.

6.1.2 Total Project Impacts with Alternative 2: PA 14 Dirt Import

Figure 10 and Table 6 describe and list the approximate total acreages of vegetation communities that will be permanently and temporary impacted by Project activities should Alternative 2 for importing dirt be implemented.

Table 6. Alternative 2: PA 14 Dirt Import – On-Site Vegetation Community Impacts[1]

Vegetation Community	Existing Vegetation onsite (acres)	Total Permanent Impacts (acres)	Total Temporary Impacts[3] (acres)	Avoided (acres)
Riversidian Sage Scrub/Chaparral	0.15	0.00	0.10	0.05
Widened and Restored Bedford Canyon Wash[2]	0.20	0.01	0.09[4]	0.10
Ruderal	15.14	14.86	0.00	0.28
Disturbed/Developed	2.28	2.05	0.00	0.23
TOTAL	**17.77**	**16.92**	**0.19[3]**	**0.66**

Notes:

1. Acreages presented in the table represent those found within the Project Boundary. The surrounding 500-foot buffer consists primarily of developed/disturbed vegetation community including; Interstate-15, Eagle Glen Road, graded and disturbed land within the Arantine Hills Project.

2. Included within the Arantine Hills Project, Widened and Restored Wash design. Specifically, the portions of the Widened and Restored Wash within the Project Boundary includes concrete ramps entering and exiting the Wash, buried riprap slope protection, and concrete Wash crossing.

3. Temporary impacts are due to the access ramp from PA 14 to the commercial site, which is to be constructed during grading operations. Following the completion of the grading operations the temporary dirt ramp would be removed and the bluff will be reconstructed and replanted with coastal sage scrub mix.

4. The 0.09 acres of temporary impacts to the Widened and Restored Bedford Canyon Wash occur completely within the limits of the existing concrete pad crossing and do not impact native or seeded habitat.

Of the total 16.92 acres impacted onsite, direct impacts to 16.91 acres are not considered significant because the habitats are common in the Project Vicinity and have minimal habitat value. Furthermore, these impacts do not represent CNDDB, State, or MSHCP sensitive plant communities. In addition, many of these areas within the Study Area exhibit a moderate or high level of disturbance.

Temporary impacts would occur to 0.19 acres. These impacts are due to the construction of an access ramp leading down to the existing concrete crossing of Bedford Canyon Wash. Grading the access ramp would require creating a notch in the existing bluff with side slopes. Fill, ranging from 5 feet to 10 feet, would be temporarily placed on top of the existing concrete pad crossing Bedford Canyon Wash to both protect the concrete pad and function as a ramp to gain elevation.

Careful grading operations and BMPs would avoid dirt spoils in Bedford Canyon Wash. Import operation would need to take place during the dry season, however, temporary pipe culverts

would be placed on top of the concrete pad under the dirt ramp in case unexpected monsoonal storms caused Bedford Canyon Wash to flow.

Following completion of the grading operations, the temporary dirt bridge and culverts would be removed from the concrete pad crossing Bedford Canyon Wash and the notch in the bluff for the access ramp would be reconstructed at 2:1 slopes and surface terrace drains would be added to control storm runoff to minimize erosion. The graded slopes would be replanted with a native coastal sage scrub mix.

Of the total 16.92 acres impacted onsite, the 0.01 acre of impacts to Bedford Canyon Wash would occur within an area that was previously disturbed through authorization of Regulatory Permits for the widening and restoration of Bedford Canyon Wash. Therefore, no new impacts to jurisdictional waters would occur and no additional Regulatory Permits are required.

No direct impacts are expected to occur within the surrounding buffer area. Indirect impacts to the surrounding 500-foot buffer area could occur from construction activities, however impacts would be less than significant because no sensitive habitat or sensitive species are located within the Buffer Area, the habitats are common in the Project Vicinity; the area consists of disturbed/developed vegetation communities; and construction BMP's such as compliance with air quality regulations would require frequent watering during construction activities to minimize dust.

6.2 Potential Impacts to Special Status Plants

As concluded in Section 5.2 above, no special status plant species were observed during the 2019 surveys and none are expected to occur onsite due to the lack of suitable habitat found on the Project site; therefore, for either dirt import alternative there are no potential impacts to special status plants due to Project implementation.

6.3 Potential Impacts to Critical Habitat

As concluded in Section 5.3 above, the Project site does not contain a designated Critical Habitat overlay. The closest designated Critical Habitat is located approximately 0.01 mile south for the CAGN. No designated Critical Habitat is located onsite; therefore, for either dirt import alternative there are no potential impacts to designated Critical Habitat due to Project implementation.

6.4 Potential Impacts to Special Status Wildlife

As shown in Table 7 below, some impacts to avian species protected by the MBTA may occur as a result of Project construction for both dirt import alternatives. If Project construction is scheduled to occur during the typical breeding bird season (January 1 through August 15 for raptors and February 15 through September 15 for all other avian species), short-term noise

effects to birds that may forage or nest onsite may occur. A pre-construction nesting bird survey is required within five (5) days of ground disturbances during typical nesting bird season to delineate any active nests found within the Project site and 300-foot buffer. Should an active nest be observed onsite, a no-work buffer shall occur surrounding the active nest, until determined by the Project Biologist it has become inactive. The implementation of the pre-construction nesting bird survey shall prevent any impacts due to construction-related noise levels on species covered under the MBTA.

Of the total ten special status wildlife identified below, the Project site lacks suitable habitat for eight of the species, therefore, no impacts are expected to occur to the eight special status wildlife species as a result of Project implementation and either dirt import alternatives. It was determined the Project site contains habitat for the California Horned Lark and limited habitat for the red-diamond rattlesnake. Pre-construction nesting bird surveys as outlined above shall occur to prevent any construction-related impacts during the typical nesting bird season. Furthermore, Biological Monitoring during initial ground disturbances shall occur to identify and locate any red-diamond rattlesnake within the Project site. Should any red-diamond rattlesnake species be located within the Project site, construction and earthwork within the area shall cease to allow for the species to vacate or be relocated from the area safely to prevent any impacts by construction-related earthwork on the species.

Table 7. Impact Analysis Summary for Special Status Species

Species	Extent of Impact	Significance of Impact
California Horned Lark MSHCP: Covered Species	Suitable habitat is found within the Project site as a result of the bare spots and developed area as identified within Section 5.4.	Less than significant impact with pre-construction surveys. No species were observed on site during surveys and this species does not occupy sensitive habitat. Pre-construction surveys would ensure no direct impacts during vegetation removal.
Coastal California gnatcatcher MSHCP: Covered Species	Suitable habitat is not found on the Project site as identified within Section 5.4.	No Impact due to lack of suitable habitat onsite. Not observed during field visit.
Coastal whiptail MSHCP: Covered Species	Suitable habitat is not found on the Project site as identified within Section 5.4.	No Impact due to lack of suitable habitat onsite. Not observed during field visit.

Species	Extent of Impact	Significance of Impact
Coastal Horned Lizard MSHCP: Covered Species	Suitable habitat is not found on the Project site as identified within Section 5.4.	No Impact due to lack of suitable habitat onsite. Not observed during field visit.
Least Bell's Vireo MSHCP: Covered Species	No suitable habitat is found within the Project site as identified within Section 5.4.	No Impact due to lack of suitable habitat onsite. Not observed during field visit.
Orange-throated Whiptail MSHCP: Covered Species	No suitable habitat is found within the Project site as identified within Section 5.4.	No Impact due to lack of suitable habitat onsite. Not observed during field visit.
Red-Diamond Rattlesnake MSHCP: Covered Species	Limited habitat is found onsite due to the bare and disturbed areas with heavy brush found onsite as identified within Section 5.4.	Less than significant impact with Biological Monitoring during initial ground disturbances. No species were observed onsite during surveys. Biological Monitoring during initial ground disturbances would ensure no direct impacts during ground disturbances.
Stephen's Kangaroo Rat MSHCP: Covered Species	No suitable habitat is found within the Project site as identified within Section 5.4.	No Impact due to lack of suitable habitat onsite. Not observed during field visit.
Southern California Rufous-Crowned Sparrow MSHCP: Covered Species	No suitable habitat is found within the Project site as identified within Section 5.4.	No Impact due to lack of suitable habitat onsite. Not observed during field visit.
Western Spadefoot MSHCP: Covered Species	No suitable habitat is found within the Project site as identified within Section 5.4.	No Impact due to lack of suitable habitat onsite. Not observed during field visit.

Project construction could also result in additional short-term impacts including night lighting, littering, and illegal wildlife collections. However, Project compliance with the following BMPs consistent with State and federal laws would reduce the potential for such indirect impacts to below significance:

- All temporary construction-related night lighting used in onsite development areas will be shielded and/or directed downward to avoid indirect impacts to nocturnal wildlife such that night lighting could increase predation rates.

- All construction contractors, subcontractors, and employees will comply with the litter and pollution laws and will institute a litter control/removal program during the course of construction activities to reduce the attractiveness of the area to opportunistic predators such as coyotes, opossums, and common ravens.

- Active nests (nests with chicks or eggs) cannot be removed or disturbed. Nests may be removed or disturbed by a qualified biologist, if not active.

- Construction employees, contractors, and site visitors will be prohibited from collecting wildlife.

With implementation of the night lighting reduction PDFs via their inclusion in the Project's MMRP, potential indirect long-term impacts to wildlife would be reduced to below significance.

6.5 Potential Impacts to Wildlife Movement

As described earlier, Bedford Canyon Wash may serve a function in local wildlife movement. Bedford Canyon Wash provides connectivity between the Santa Ana Mountains and Lake Matthews. Therefore, Bedford Canyon Wash does provide a connection between large areas of undeveloped land, which may be utilized for wildlife movement. Furthermore, with the widened and restored Bedford Canyon Wash on the Arantine Hills project located upstream, Bedford Canyon Wash corridor will continue to provide a valuable linkage for wildlife. Project implementation will not impact the ability of Bedford Canyon Wash to continue to serve as a movement corridor.

Therefore, no impacts to wildlife movement are anticipated as a result of implementation of the Project and either dirt import alternative.

6.6 Potential Impacts to Jurisdictional Features

Implementation of the Arantine Hills Specific Plan includes the widening, protection, and restoration of Bedford Canyon Wash. To permit those activities, the following Regulatory Permits and MSHCP Consistency Determination were issued:

- U.S. Army Corps of Engineers (Corps File No. SPL-2015-00361-ERS)
- California Department of Fish and Wildlife (Notification No. 1600-2015-0055-R6):
- Regional Water Quality Control Board (SARWQCB Project NO. 332014-24)
- U.S. Fish and Wildlife Service (FWS-WRIV-15B0271-16F0852)

- MSHCP Consistency Determination and Determination of Biologically Equivalent or Superior Preservation (DBESP) (FWS/CDFW-15BO0271-15CPA0281)

The Regulatory Permits and MSHCP Consistency authorized the widening and restoration of Bedford Wash, including certain improvements for flood protection. Buried rip-rap extending down to scour depth was permitted along both sides of the Wash. Grade stabilizing structures were permitted perpendicular to flows. Several stormdrain outlet structures surrounded by a concrete structure were incorporated into the rip-rap lined banks to outlet storm flows from the development area into Bedford Wash. Additionally, two concrete crossings were permitted, at the far upstream and downstream limits within the Arantine Hills Specific Plan. The concrete crossings allow maintenance vehicles to cross the Wash and access the bluff side. Additionally, a future bridge crossing Bedford Wash is authorized by the Regulatory Permits. The Regulatory Permits remain active and Project activities authorized under the permits remain on-going.

The proposed Project has two components that could affect the jurisdictional areas of Bedford Canyon Wash. One component of the Project is a storm drain pipe from the on-site detention basin that must outlet into Bedford Wash. The Project proposes to outlet the storm drain pipe with the same design as other outlets into Bedford Wash, with the pipe outletting through a concrete structure constructed into the rip-rap lined bank of Bedford Wash, which results in approximately 0.01 acre of modification to the rip-rap lined bank of Bedford Wash (Figure 11). For the proposed Project, the outlet structure will be constructed on the downstream concrete crossing, eliminating any impacts to the soft bottom portion of the Wash. Since the outlet structure is located outside of the invert of Bedford Canyon Wash, construction of the outlet structure would occur beyond the jurisdictional limits of Waters of the United States. Furthermore, since the proposed outlet structure is located in an area of Bedford Wash that was previously disturbed through authorization of Regulatory Permits and MSHCP Consistency Determination for the widening and restoration of Bedford Canyon Wash, and those permits remain active, no new impacts to Waters of the State or MSHCP Features would occur and no additional Regulatory Permits are required.

The second component of the Project would only occur if Alternative 2, which includes moving fill dirt from Planning Area 14 to the Project site across Bedford Wash, is implemented. In order to move fill dirt across Bedford Wash, fill would be temporarily placed on top of the existing concrete pad crossing Bedford Canyon Wash to both protect the concrete pad and function as a ramp to gain elevation. A notch would be graded into the plateau to the south of Bedford Wash and scrapers would move dirt across the temporary earthen ramp placed on the existing concrete pad crossing Bedford Wash. The placement of temporary fill on the concrete pad would cover an area of 0.09 acre of Waters of the State/MSHCP Features and 0.06 acres of Waters of the United States, which matches the area of the existing concrete pad crossing (Figure 12). No temporary fill dirt would be placed in the soft-bottom portion of Bedford Wash. Since the proposed ramp is located in an area that consists of existing concrete and was previously disturbed through authorization of Regulatory Permits for the widening and restoration of Bedford Canyon Wash, and those permits remain active, no new impacts to Waters of the State, Waters of the United States, or MSHCP Features would occur and no additional Regulatory Permits are required.

6.7 Potential Impacts to MSHCP Features

As part of Project implementation an outlet will be installed within the buried riprap slope protection of Bedford Canyon Wash. Please refer to the discussion within Section 6.6. Since the proposed outlet structure, and should Alternative 2 be implemented the dirt ramp, are located in an area of Bedford Wash that was previously disturbed through authorization of Regulatory Permits and MSHCP Consistency for the widening and restoration of Bedford Canyon Wash, no new impacts to MSHCP Riparian/Riverine Features would occur.

A separate MSHCP Consistency Analysis Report has been prepared, which analyzes whether project impacts are consistent with MSHCP goals and objectives.

7.0 BMPs/PDFs Incorporated into the Project and MMRP

The Project will comply with the following:

- Work area limits will be defined and respected. All grading areas will have their boundaries clearly flagged or marked before Project implementation and all disturbances will be confined to the flagged areas. All key Project personnel will be instructed that their activities must be confined to locations within the flagged areas. Disturbance beyond the actual grading zone is prohibited without site-specific surveys.

- Cleared or trimmed non-native, exotic vegetation, and woody debris will be disposed of in a legal manner at an approved disposal site.

- Employees, contractors, and site visitors will be prohibited from collecting plants and wildlife.

- Water pollution and erosion control plans will be developed and implemented in accordance with SWPPP requirements.

- Access to construction sites will be via preexisting access routes.

- Construction equipment will be properly maintained; construction employees and contractors will be trained on proper implementation and monitoring of BMPs; and procedures will be implemented to minimize the likelihood of hazardous spills and to control sediment-laden runoff.

- Effective perimeter control BMPs to control discharge of pollutants from the Project site during construction.

- All temporary construction-related night lighting used in onsite development areas will be shielded and/or directed downward to avoid indirect impacts to nocturnal wildlife such that night lighting could increase predation rates.

- All construction contractors, subcontractors, and employees will comply with the litter and pollution laws and will institute a litter control/removal program during the course of construction activities to reduce the attractiveness of the area to opportunistic predators such as coyotes, opossums, and common ravens.

- Active nests (nests with chicks or eggs) cannot be removed or disturbed. Nests may be removed or disturbed by a qualified biologist, if not active.

8.0 Significance Determination and Proposed Mitigation

8.1 Threshold No. 1

Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

No special status plant species exist on the Project site. Furthermore, no suitable habitat for the plant species and eight of the wildlife species identified within Table 6 is found within the Project site, and no observations of the species have been made.

It was determined the Study Area contains habitat for the California Horned Lark and limited habitat for the red-diamond rattlesnake. Pre-construction nesting bird surveys as outlined within **MM_BIO-1** shall occur to prevent any construction-related noise impacts during the typical nesting bird season on nesting bird species protected under MBTA. Furthermore, Biological Monitoring shall occur during initial ground disturbances to identify and locate any red-diamond rattlesnake within the Project site as outlined within **MM BIO-2**. Should any red-diamond rattlesnake species be located within the Project site, construction and earthwork within the area shall cease to allow for the species to vacate the area safely to prevent any impacts by construction-related earthwork on the species.

The Migratory Bird Treaty Act protects nesting activities of both native and non-native bird species. Under the Act it is unlawful to harm, harass, or take a nest. Since removal of vegetation could result in impacts to nesting birds, the following mitigation measure is included to reduce impacts to less than significant.

MM BIO – 1: The removal of potential nesting bird habitat shall be conducted outside of the nesting season (February 15 to September 15) to the extent feasible. If grading or site disturbance is to occur between February 15 and September 15, a nesting bird survey shall be conducted by a qualified biologist within no more 5 days of scheduled vegetation removal, to determine the presence of nests or nesting birds. If active nests are identified, the biologist would establish buffers around the vegetation (500 feet for raptors and sensitive species, 200 feet for non-raptors/non-sensitive species). All work within these buffers would be halted until the nesting effort is finished (i.e. the juveniles are surviving independent from the nest). The onsite biologist would review and verify compliance with these nesting boundaries and would verify the nesting effort has finished. Work can resume when no other active nests are found. Alternatively, a qualified biologist may determine that construction can be permitted within the buffer areas and would develop a monitoring plan to prevent any impacts while the nest continues to be active (eggs, chicks, etc.). Upon completion of the survey and any follow-up construction avoidance management, a report shall be prepared and submitted to CDFW for mitigation

monitoring compliance record keeping. If vegetation clearing is not completed within 5 days of a negative survey, the nesting survey must be repeated to confirm the absence of nesting birds.

Red-diamond Rattlesnake is a CDFW species of special concern. Since removal of the heavy brush could result in impacts to the species, the following mitigation measure is included to reduce impacts to less than significant.

> **MM BIO – 2:** A Biological Monitor shall be onsite during the initial ground disturbances to identify and locate any red-diamond rattlesnake within the Project site. Should any red-diamond rattlesnake species be located within the Project site, construction and earthwork within the immediate area of the identified species shall cease to allow for the species to vacate or be relocated from the area safely. Work can resume when the species has vacated the immediate ground disturbances work area.

With the implementation of MM BIO-1 and MM BIO-2, potential impacts to nesting birds and special status wildlife species are reduced to a less than significant level.

8.2 Threshold No. 2

Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

As part of both of the alternatives and overall Project implementation an outlet will be installed within the buried riprap slope protection of Bedford Canyon Wash. The apron for the outlet opening occurs at the downstream concrete Wash crossing. Furthermore, for the import of dirt utilizing dirt from Planning Area 14, a temporary dirt bridge and culvert will be placed on the existing concrete pad crossing and removed following grading operation completion. Since the proposed outlet structure (for both alternatives), and dirt ramp (for Alternative 2), are located in an area of Bedford Wash that was previously disturbed through authorization of Regulatory Permits for the widening and restoration of Bedford Canyon Wash, no new impacts to Waters of the State or Waters of the United States would occur and no additional Regulatory Permits are required. The outlet is located within the slope and beyond jurisdiction of Waters of the US. Furthermore, no riparian habitat or sensitive natural communities is identified within this area; therefore, no impacts to riparian habitat or sensitive natural communities would occur and no mitigation is required. Further discussion can be found in Section 6.6.

8.3 Threshold No. 3

Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

As part of Project implementation an outlet will be installed within the buried riprap slope protection of Bedford Canyon Wash. The apron for the outlet opening occurs at the downstream concrete Wash crossing. Since the proposed outlet structure is located in an area of Bedford Wash that was previously disturbed through authorization of Regulatory Permits for the widening and restoration of Bedford Canyon Wash, no new impacts to Waters of the State would occur and no additional Regulatory Permits are required. The outlet is located within the slope and beyond jurisdiction of Waters of the US. This area was previously disturbed and outside of the original limits of Bedford Canyon Wash prior to the widened Wash. As a result, no additional permits are required with Project implementation. Furthermore, the Project will not have a substantial adverse effect on federally protected wetlands as define by Section 404, since the minimal impacts are expected to occur within the riprap slope protection; therefore, no impacts to federally protected wetlands as define by Section 404 would occur and no mitigation is required.

8.4 Threshold No. 4

Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory corridors, or impede the use of native wildlife nursery sites?

Bedford Canyon Wash may serve a function in local wildlife movement. Bedford Canyon Wash provides connectivity between the Santa Ana Mountains and Lake Matthews and does provide a connection between large areas of undeveloped land, which may be utilized for wildlife movement. Furthermore, with the implementation of the widened and restored Bedford Canyon Wash, it will continue to provide a valuable linkage for wildlife. Project implementation will not impact the ability of Bedford Canyon Wash to continue to serve as a movement corridor. Therefore, no impacts to wildlife movement are anticipated as a result of implementation of the Project.

Since removal of vegetation could result in impacts to nesting birds, **MM BIO-1** shall be implemented to reduce impacts to less than significant.

8.5 Threshold No. 5

Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The City does not have any local policies, such as a tree preservation ordinance, that protect biological resources. Therefore, no impacts would occur, and no mitigation is necessary.

8.6 Threshold No. 6

Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The Project site is located within the MSHCP, specifically within the Temescal Canyon Area Plan. A Project Consistency Analysis has been prepared analyzing the impacts and mitigation measures.

As part of Project implementation an outlet will be installed within the buried riprap slope protection of Bedford Canyon Wash. The apron for the outlet opening occurs at the downstream concrete Wash crossing. Furthermore, as part of Project impacts, the alternative 2 would create a temporary dirt bridge placed on the existing concrete pad crossing and removed following grading operation completion. Since the proposed outlet structure (both import alternatives) and temporary dirt bridge (Alternative 2) are located in an area of Bedford Wash that was previously disturbed through authorization of Regulatory Permits and MSHCP Consistency for the widening and restoration of Bedford Canyon Wash, no new impacts to MSHCP Riparian/Riverine Features would occur.

The Project site falls within Narrow Endemic Plants (Survey Area Number 7). As concluded in Section 6.2 above, no special status plant species were observed during the 2019 surveys and none are expected to occur onsite due to the lack of suitable habitat found on the Project site; therefore, there are no impacts to Narrow Endemic Plants and no conflicts with an approved conservation plan for either dirt import alternatives and Project implementation.

Furthermore, the Project site contains the BUOW overlay. As a result, a series of four focused BUOW survey was conducted per MSHCP Section 6.3.2 and MSHCP protocol Focused Survey Instructions. While potentially suitable habitat exists onsite, no BUOW, suitable burrows, or signs of BUOW were present during the surveys. Complete results can be found within the Focused BUOW Report in Appendix A. Since BUOW are migratory species, **MM BIO – 3** shall be implemented prior to ground disturbance.

> **MM BIO – 3:** Pre-construction presence/absence surveys for burrowing owl within the survey area where suitable habitat is present shall be conducted by a qualified biologist within 30 days of ground disturbing activities. If active burrowing owl burrows are detected during the breeding season, all work within 300 feet of any active burrow will

be halted until that nesting effort is finished. The on-site biologist will review and verify compliance with these boundaries and will verify the nesting effort has finished. Work can resume when no other active burrowing owl burrows nests are found.

If active burrowing owl burrows are detected outside the breeding season or during the breeding season and it is determined nesting activities have not begun, then passive and/or active relocation may be approved following consultation with CDFW. The installation of one-way doors may be installed as part of a passive relocation program. Burrowing owl burrows shall be excavated with hand tools when determined to be unoccupied by Project biologist, and back filled to ensure that animals do not re-enter the burrows. Upon completion of the survey and any follow-up construction avoidance management, a report shall be prepared and submitted to CDFW, and the City for mitigation monitoring compliance record keeping.

With the implementation of MM BIO-3, potential impacts to existing MSHCP features are reduced to a less than significant level.

9.0 Cumulative Impacts

Direct impacts may occur to nesting birds, should construction activities and vegetation removal take place during the typical nesting season, regardless of the alternative implemented. However, adherence to the BMPs as outlined in Section 7.0, as well as implementation of MM-Bio 1, and MM-Bio 2 will ensure impacts to special status species or their habitats are minimized thus reducing the Project's contribution to cumulative impacts to less than significant.

As part of both import alternatives, an outlet will be installed within the buried riprap slope protection of Bedford Canyon Wash. The apron for the outlet opening occurs at the downstream concrete Wash crossing. Furthermore, as part of Alternative 2: PA14 Dirt Import, a temporary dirt bridge and culvert will be placed on the existing concrete pad crossing and removed following grading operation completion. Since the proposed outlet structure is located in an area of Bedford Wash that was previously disturbed through authorization of Regulatory Permits and MSHCP Consistency for the widening and restoration of Bedford Canyon Wash, no new impacts to MSHCP Riparian/Riverine Features would occur.

Furthermore, the MSHCP was specifically designed to cover a large geographical area so that it would protect numerous special-status species and sensitive habitats throughout the region. It is the projected cumulative effect of future development that has required the preparation and implementation of the MSHCP to protect multiple habitats and species. Because the MSCHP provides a regional and comprehensive approach to conservation planning, the proposed Project's contribution to cumulative impacts would also be less than significant.

10.0 Literature Cited

Amphibiaweb. 2019. Species Accounts. Retrieved from: http://amphibiaweb.org/search/index.html

AOU (The American Ornithologists' Union). 1998. Check-List of North American Birds. 7th Edition. American Ornithologists' Union, Washington, D.C. 829 pp.

Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors. 2012. The Jepson Manual: Vascular Plants of California, second edition. University California Press, Berkeley.

Bowers, N., R. Bowers, and K. Kaufman. 2004. Mammals of North America. Houghton Mifflin Company, New York.

Brady, Roland H. III, Kris Vyverberg. 2013. Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants. California Energy Commission. Publication Number: CEC-500-2014-013.

Calflora. 2019. Calflora website - search for plants. Retrieved from: http://www.calflora.org/species/index.html.

CaliforniaHerps.com. 2019. California Herps. A Guide to the Reptiles and Amphibians of California. Retrieved from: http://www.californiaherps.com/.

Cal-IPC (California Invasive Plant Council). 2006. California Invasive Plant Inventory. Cal-IPC Publication 2006-02. California Invasive Plant Council: Berkeley, CA. Retrieved from: http://www.cal-ipc.org/ip/inventory/index.php.

CDFW (California Department of Fish and Wildlife). 2019. Natural Communities List. Biographic Data Branch. The Vegetation Classification and Mapping Program. https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities.

CDFW (California Department of Fish and Wildlife). 2019a. California Endangered Species Act (CESA). Retrieved from: https://www.wildlife.ca.gov/Conservation/CESA.

CDFW (California Department of Fish and Wildlife). 2019b. California Environmental Quality Act (CEQA). Retrieved from: https://www.wildlife.ca.gov/Conservation/CEQA.

CDFW (California Department of Fish and Wildlife). 2019c. Fish and Game Code Section 1600-1616. Retrieved from: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=3784.

CDFW (California Department of Fish and Wildlife). 2019d. Lake and Streambed Alteration Program. Retrieved from: https://www.wildlife.ca.gov/Conservation/LSA.

CDFW (California Department of Fish and Wildlife). 2019e. Life History Accounts and Range Maps – California Wildlife Habitat Relationship System. Retrieved from: https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range.

CDFW (California Department of Fish and Wildlife). 2019f. RareFind, California Department of Fish and Wildlife, California Natural Diversity Database (CNDDB). State of California, The Natural Resources Agency, Department of Fish and Wildlife, Biogeographic Data Branch, California Natural Diversity Database, Sacramento, CA.

CDFW (California Department of Fish and Wildlife), Natural Diversity Database. Aug 2019g. Special Vascular Plants, Bryophytes, and Lichens List. Quarterly publication. 140 pp.

CDFW (California Department of Fish and Wildlife), Natural Diversity Database. Aug 2019h. Special Animals List. Periodic publication. 67 pp.
Retried from: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406.

CDFW (California Department of Fish and Wildlife). 2019i. State and Federally Listed Endangered, Threatened, and Rare Plants of California. State of California, The Resources Agency, Department of Fish and Wildlife, Resource Management and Planning Division, Biogeographic Data Branch, California Natural Diversity Database, Sacramento, CA.

Clark, W.S. and B.K. Wheeler. 2001. A Field Guide to Hawks of North America, Second Edition. Houghton Mifflin Company, Boston and New York.

California Native Plant Society, Rare Plant Program. 2019. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 12 March 2018].

Corps (United States Army Corps of Engineers). 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

Eder, Tamara. 2005. Mammals of California. Lone Pine Publishing International Inc, Auburn, WA.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, U.S. Army Engineer Waterways Experimental Station, Vicksburg, Mississippi.

EPA (United States Environmental Protection Agency). 2011. Laws and Regulations. Summary of the Endangered Species Act.
Retrieved from: http://www.epa.gov/lawsregs/laws/esa.html

Fahrig, L., and G. Merriam. 1985. Habitat patch connectivity and population survival. Ecology 66:1762-1768.

Federal Interagency Committee for Wetland Delineation. 1989. Federal Manual for Identifying and Delineating Jurisdictional Wetlands. U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and USDA Soil Conservation Service, Washington, DC Cooperative technical publication.

Fish and Game Commission. 2019. California Law. California Fish and Game Code. Retrieved from: http://leginfo.legislature.ca.gov/faces/codesTOCSelected.xhtml?tocCode=FGC&tocTitle=+Fish+and+Game+Code+-+FGC

Google. 2019. GoogleEarth© website.

Government Printing Office. 1991. Federal Register, 1989 "Federal Manual for Identifying Jurisdictional Wetlands; Proposed Revisions." August 14, 1991, Vol. 56, No. 157, pp 40446-40480.

Harris, L.D. and Gallagher, P.B. 1989. New initiatives for wildlife conservation: The need for movement corridors. In defense of wildlife: Preserving communities and corridors. pp. 11-34. Edited by G. Mackintosh. Defenders of Wildlife, Washington, DC.

Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. State of California, The Resources Agency, Nongame Heritage Program, California Department of Fish & Game, Sacramento, Calif. 156 pp.

Jennings, M.R. and M.P. Hayes. 1994. Amphibian and Reptile Species of Special Concern in California. Submitted to the California Department of Fish and Game Inland Fisheries Division. Rancho Cordova, CA.

National Geographic Society. Edited by Jonathan Alderfer. 2006. Complete Birds of North America. National Geographic Society. Washington D.C.

NatureServe. 2019. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://explorer.natureserve.org.

NRCS (Natural Resource Conservation Service). 2019. Web Soil Survey. U.S. Department of Agriculture Natural Resources Conservation Service. Retrieved from: http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

Riverside, County of. June 2003. *Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP)*. Prepared by Dudek.

Sibley, David Allen. 2000. National Audubon Society, The Sibley Guide to Birds. Alfred A. Knopf, New York.

Simberloff, D., and J. Cox. 1987. Consequences and costs of conservation corridors. Conservation Biology. 1:63-71.

Soule, Michael E. 1987. Viable populations for conservation. Cambridge University Press. Cambridge Cambridgeshire and New York.

SWRCB (State Water Resources Control Board). 2011. Porter-Cologne Water Quality Control Act with Additions and Amendments Effective April 2017. Compiled by the Office of Chief Counsel.
Retrieved from: http://www.swrcb.ca.gov/laws_regulations/docs/portercologne.pdf

USDA (United States Department of Agriculture) Natural Resources Conservation Service. 1995. Hydric Soils of California.

USFWS (United States Fish and Wildlife Service). 2019a. FWS Critical Habitat for Threatened and Endangered Species. Retrieved from https://www.fws.gov/endangered/.

USFWS (United States Fish and Wildlife Service). 2019b. Migratory Birds & Habitat Programs. Migratory Bird Treaty Act. Retrieved from: https://www.fws.gov/birds/policies-and-regulations.php.

USFWS (United States Fish and Wildlife Service). 2019c. National Wetlands Inventory. Wetlands Mapper. Retrieved from: http://www.fws.gov/wetlands/Data/mapper.html.

WTI (Wetland Training Institute, Inc.). 1999. Field Guide for Wetland Delineation: 1987 Corps of Engineers Manual. Glenwood, NM WTI 99-1. 143 pp.

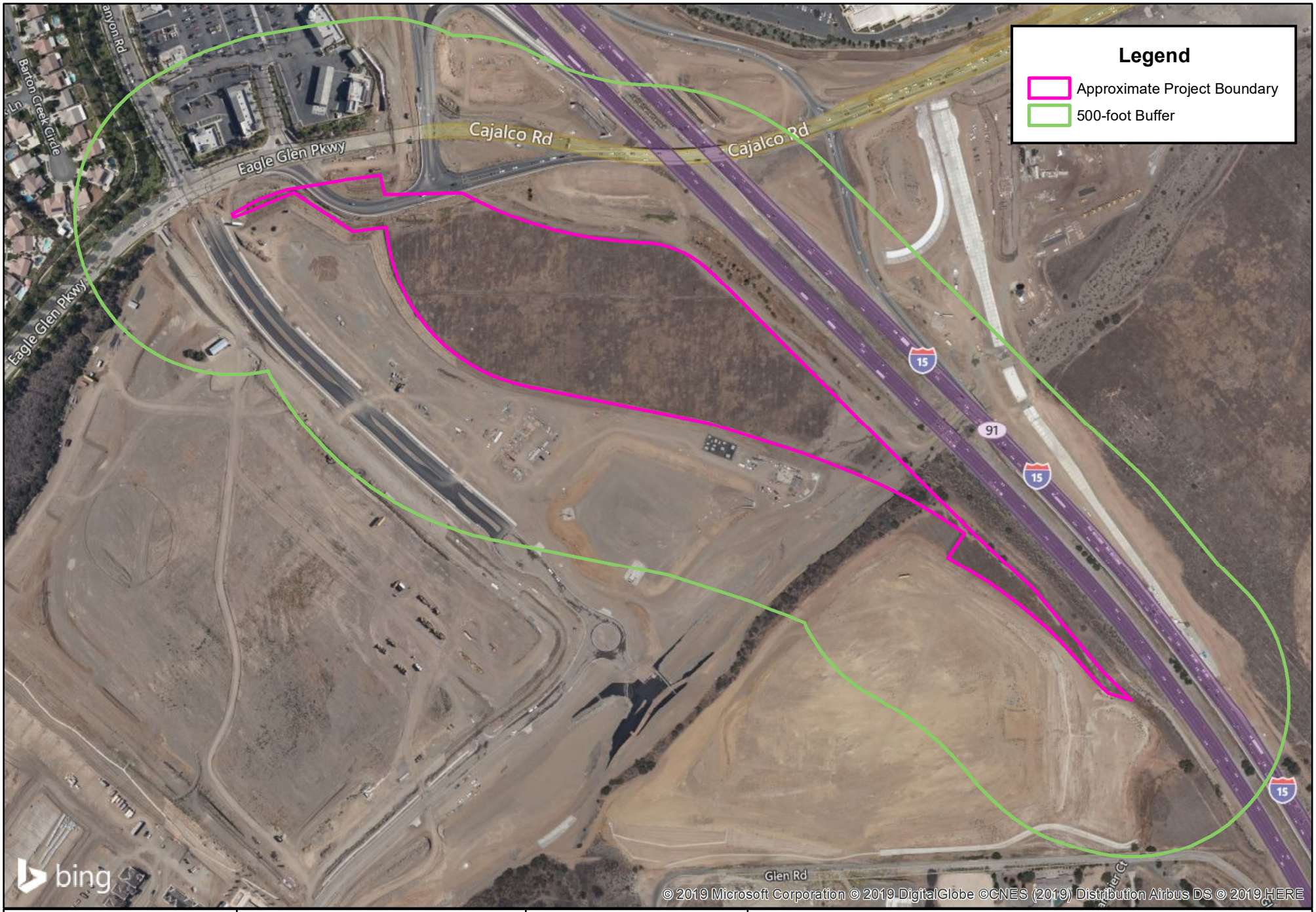
WTI (Wetland Training Institute, Inc.). 2003. Wetland Delineation Lecture Notes and Field Guide for Wetland Delineation based on the Corps of Engineers 1987 Manual. WTI, New Mexico.

Figures



GIS Prepared By: Carlson SLS Created: August 2, 2019	0 1,250 2,500 5,000 Feet 1 inch = 5,000 feet	Data Sources: Bing Maps	***Guardian Capital: Bedford Marketplace*** Regional Map

FIGURE 1



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

0 100 200 400 600 800 Feet

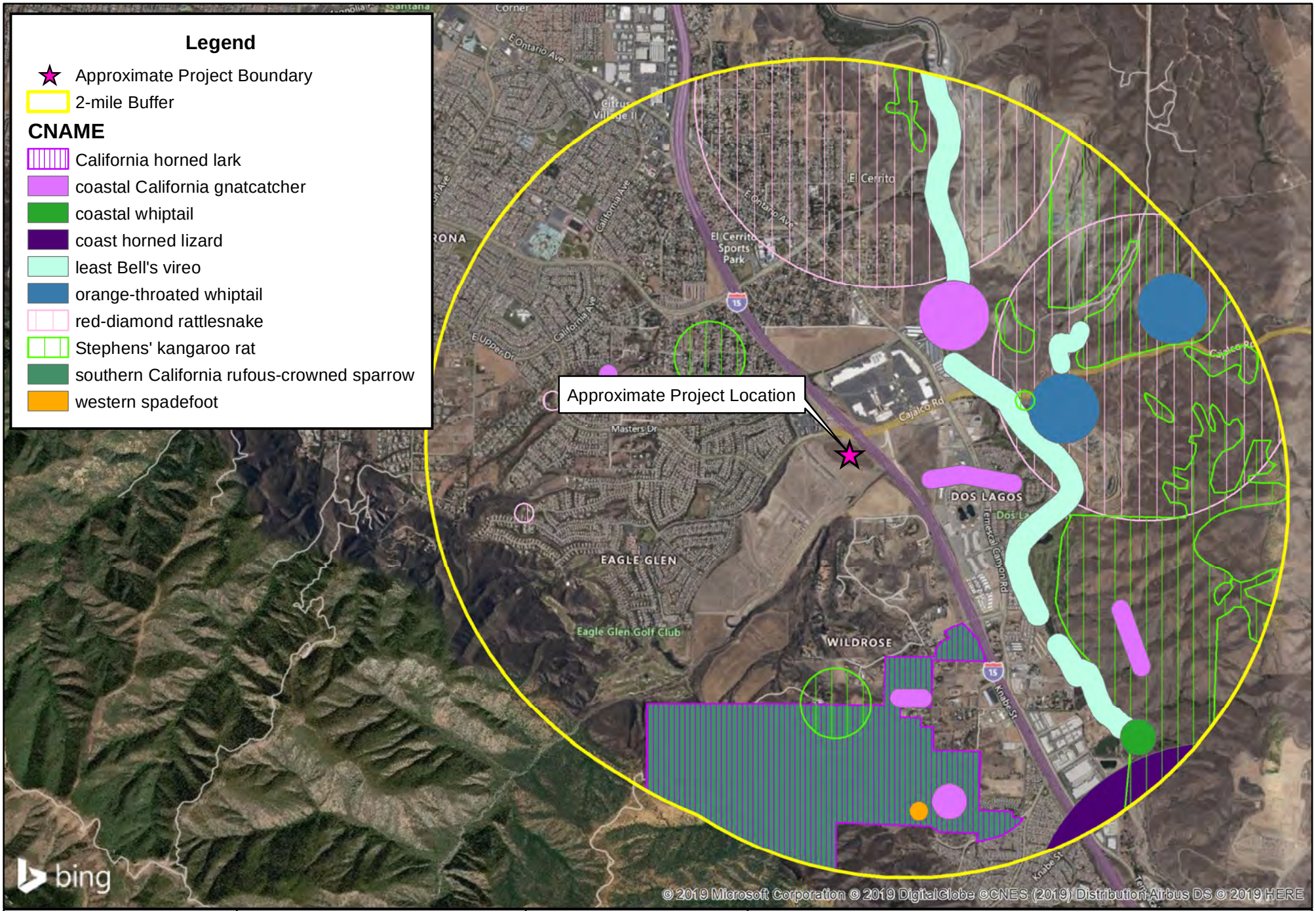
1 inch = 400 feet

Data Source: Bing Maps

Guardian Capital: Bedford Marketplace

Vicinity Map

FIGURE 2



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

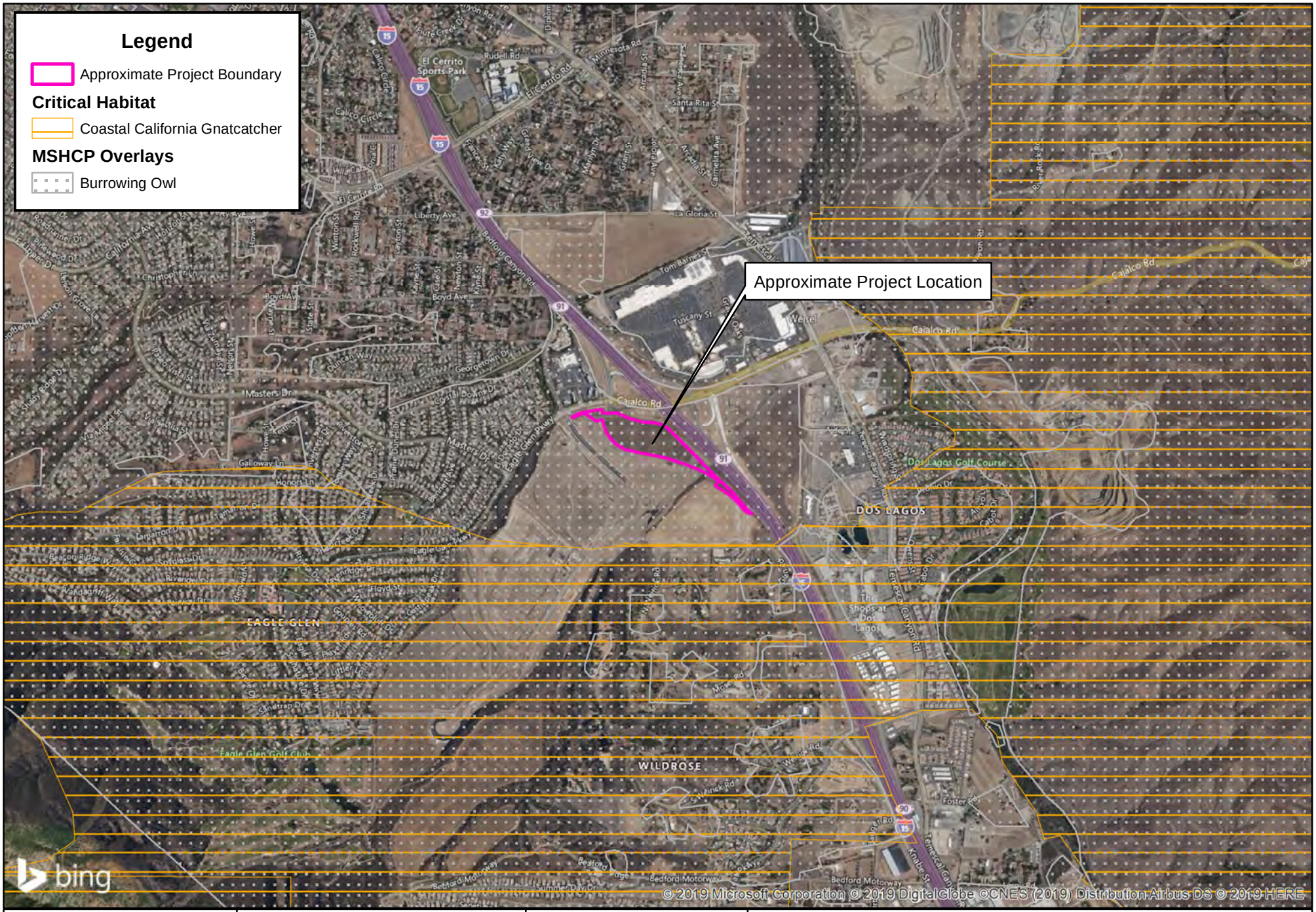
0 1,750 3,500 7,000 Feet
1 inch = 3,500 feet

Data Source: Bing Maps
CNDDB (06/2019)

Guardian Capital: Bedford Marketplace

CNDDB Occurrences Results

FIGURE 3



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

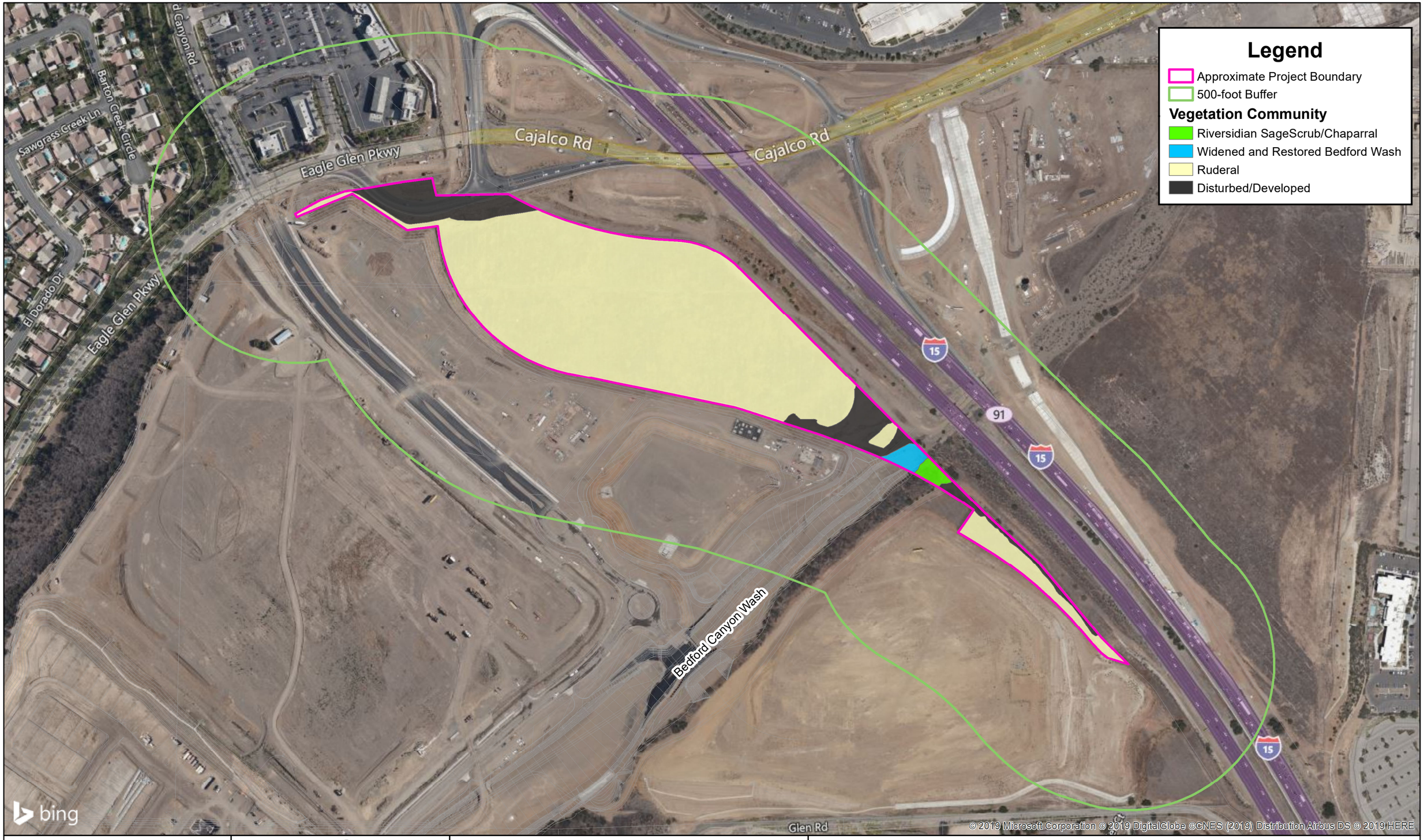
0 500 1,000 2,000 3,000 4,000 Feet
1 inch = 2,000 feet

Data Source: Bing Maps
CH (03/2015)

Guardian Capital: Bedford Marketplace

Critical Habitat and MSHCP Overlay Results

FIGURE 4



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

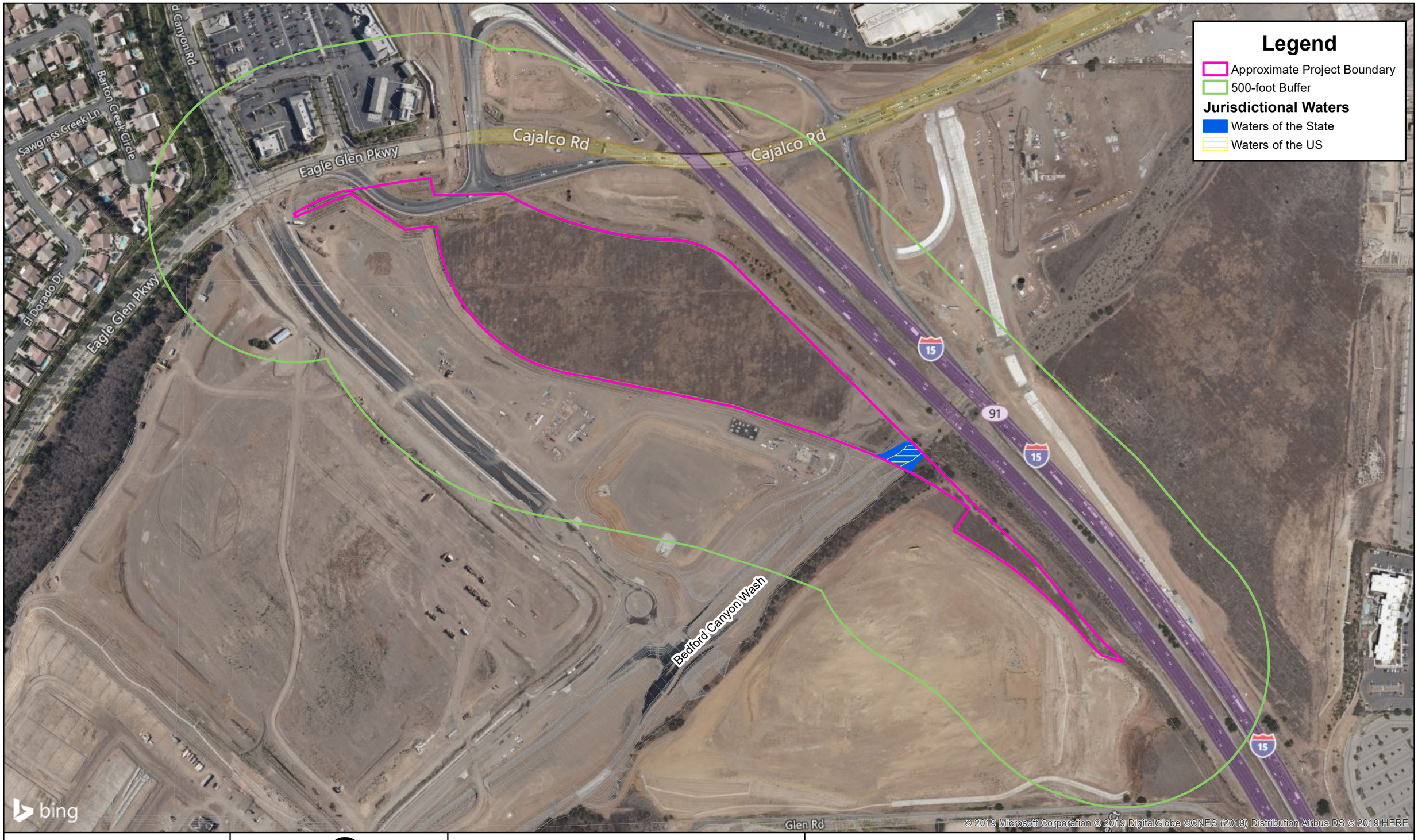
0 75 150 300 450 600 Feet
1 inch = 300 feet

Data Source: Bings Map
Field Visit (06/27/19)

Guardian Capital: Bedford Marketplace

Vegetation Map

FIGURE 5



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

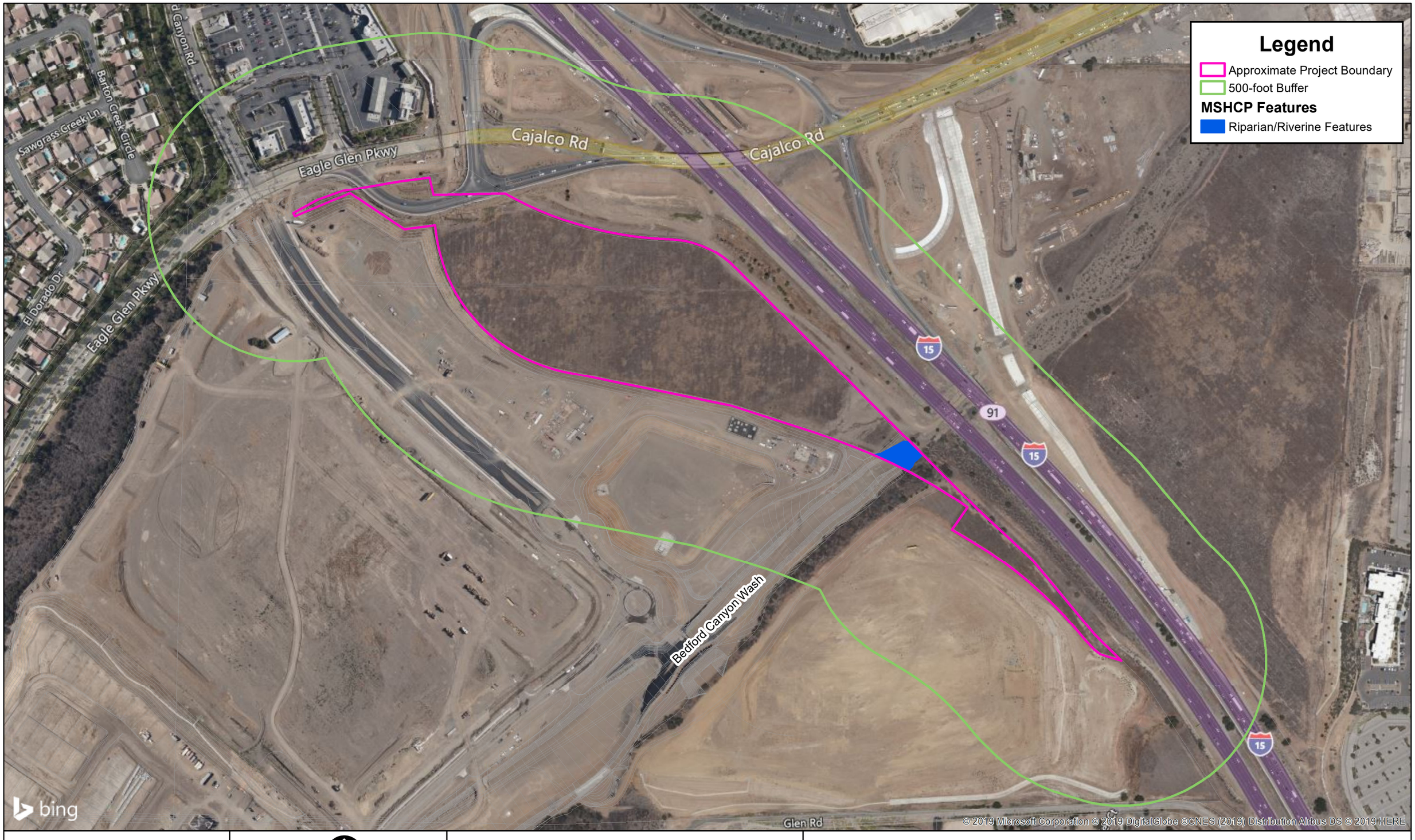
Feet
0 75 150 300 450 600
1 inch = 300 feet

Data Source: Bings Map
Field Visit (06/27/19)

Guardian Capital: Bedford Marketplace

Jurisdictional Delineation

FIGURE 6



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

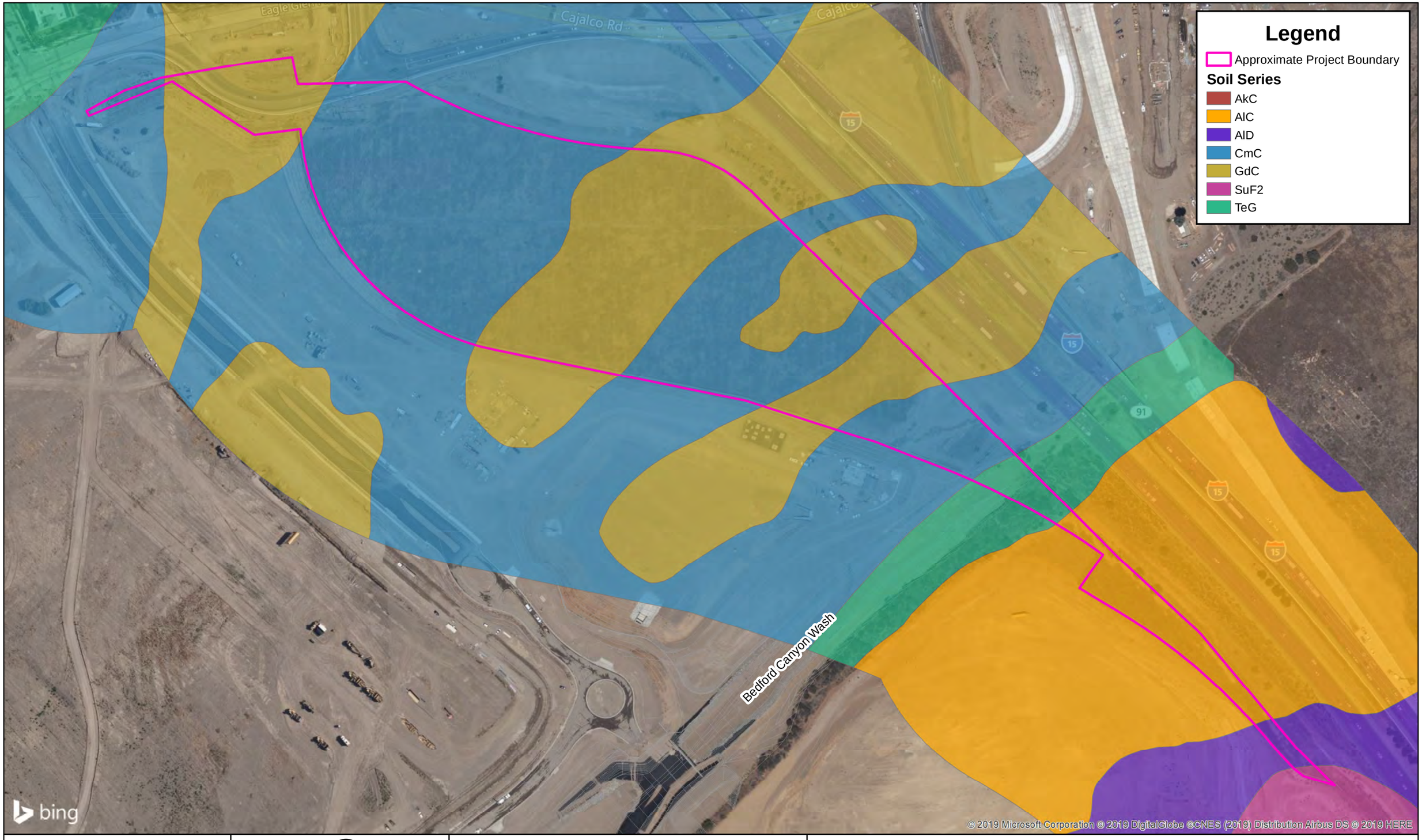
0 75 150 300 450 600 Feet
1 inch = 300 feet

Data Source: Bings Map
Field Visit (06/27/19)

Guardian Capital: Bedford Marketplace

MSHCP Riparian/Riverine Features

FIGURE 7



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

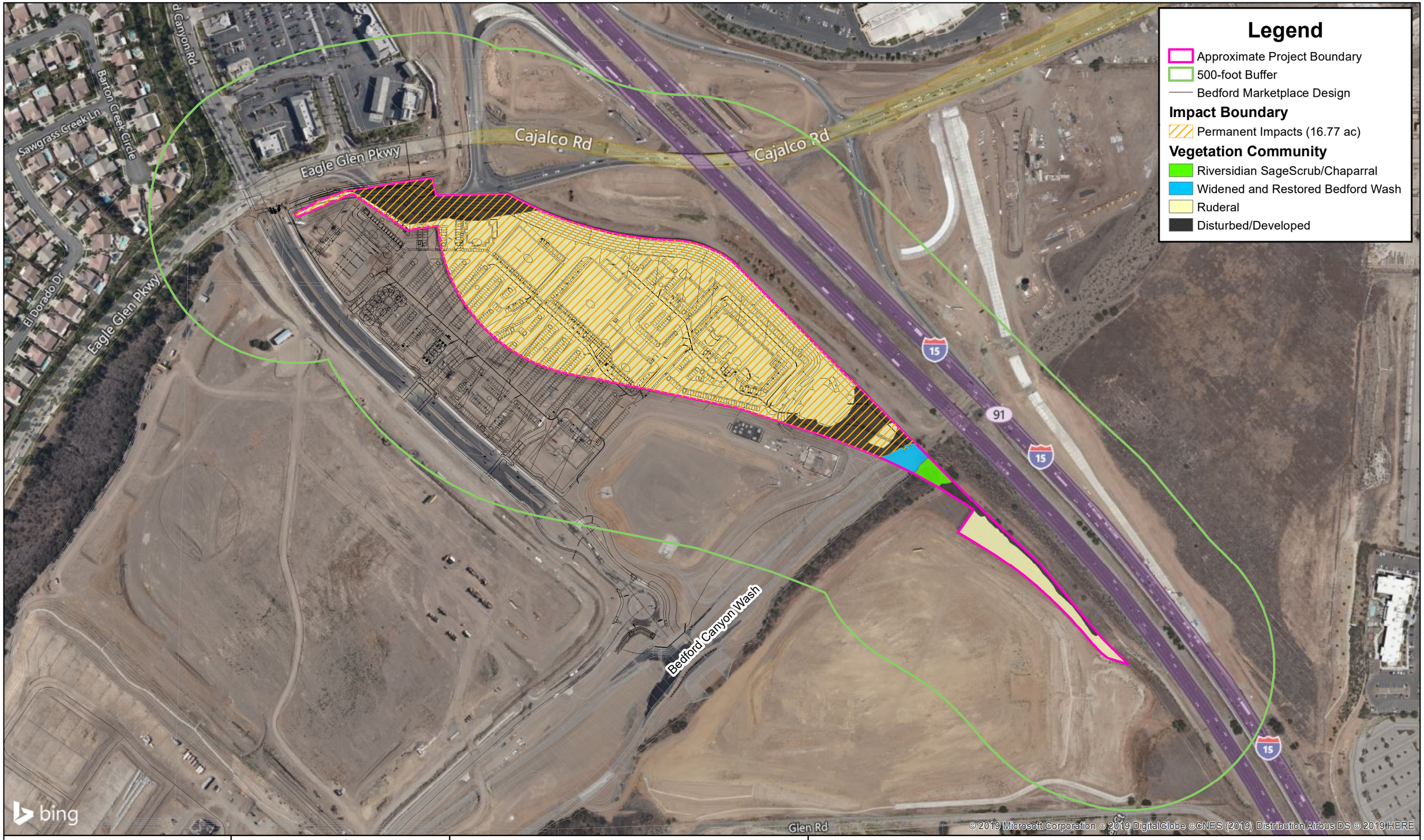
0 50 100 200 300 400 Feet
1 inch = 200 feet

Data Source: Bings Map
Field Visit (06/27/19)

Guardian Capital: Bedford Marketplace

Soil Map

FIGURE 8



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

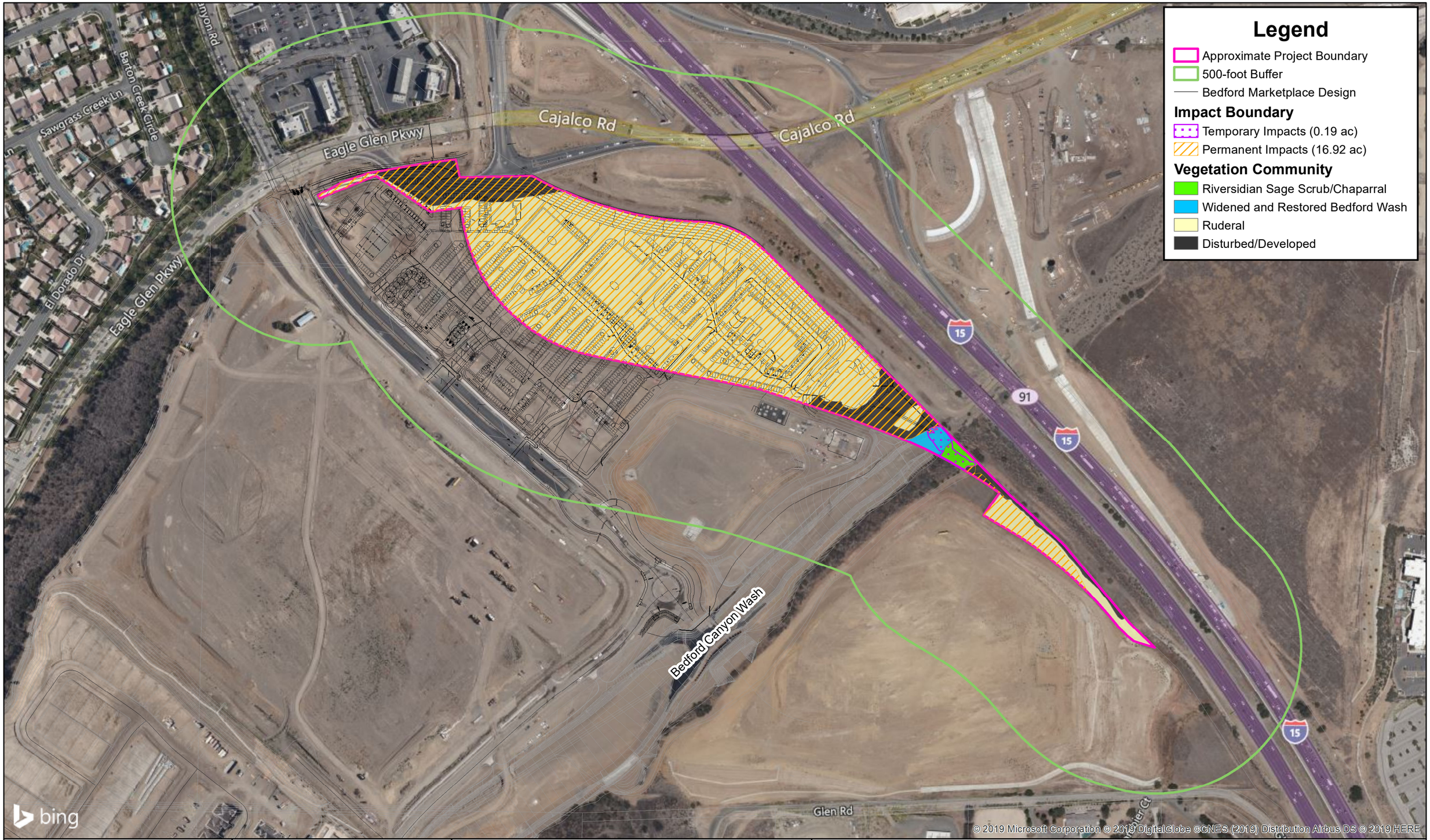
0 75 150 300 450 600 Feet
1 inch = 300 feet

Data Source: Bings Map
Field Visit (06/27/19)
Hunsaker (08/08/19)

Guardian Capital: Bedford Marketplace

Alternative 1: Off-site Dirt Import Vegetation Impacts Map

FIGURE 9



GIS Prepared By:
Carlson SLS

Created: October 7, 2019

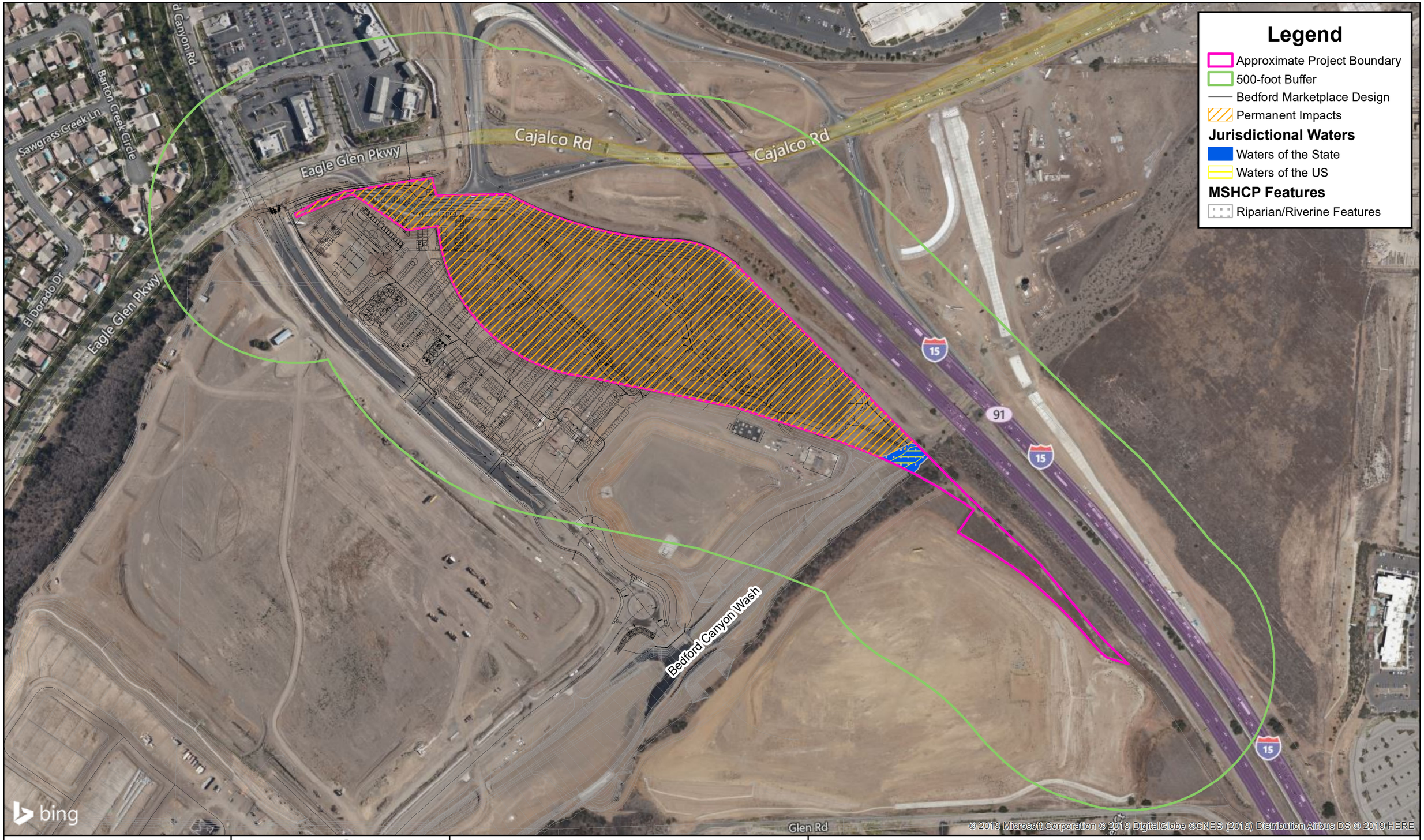
0 75 150 300 450 600 Feet
1 inch = 300 feet

Data Source: Bing Map
Field Visit (06/27/19)
Hunsaker (09/05/19)

Guardian Capital: Bedford Marketplace

Alternative 2: PA 14 Dirt Import Vegetation Impacts Map

FIGURE 10



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

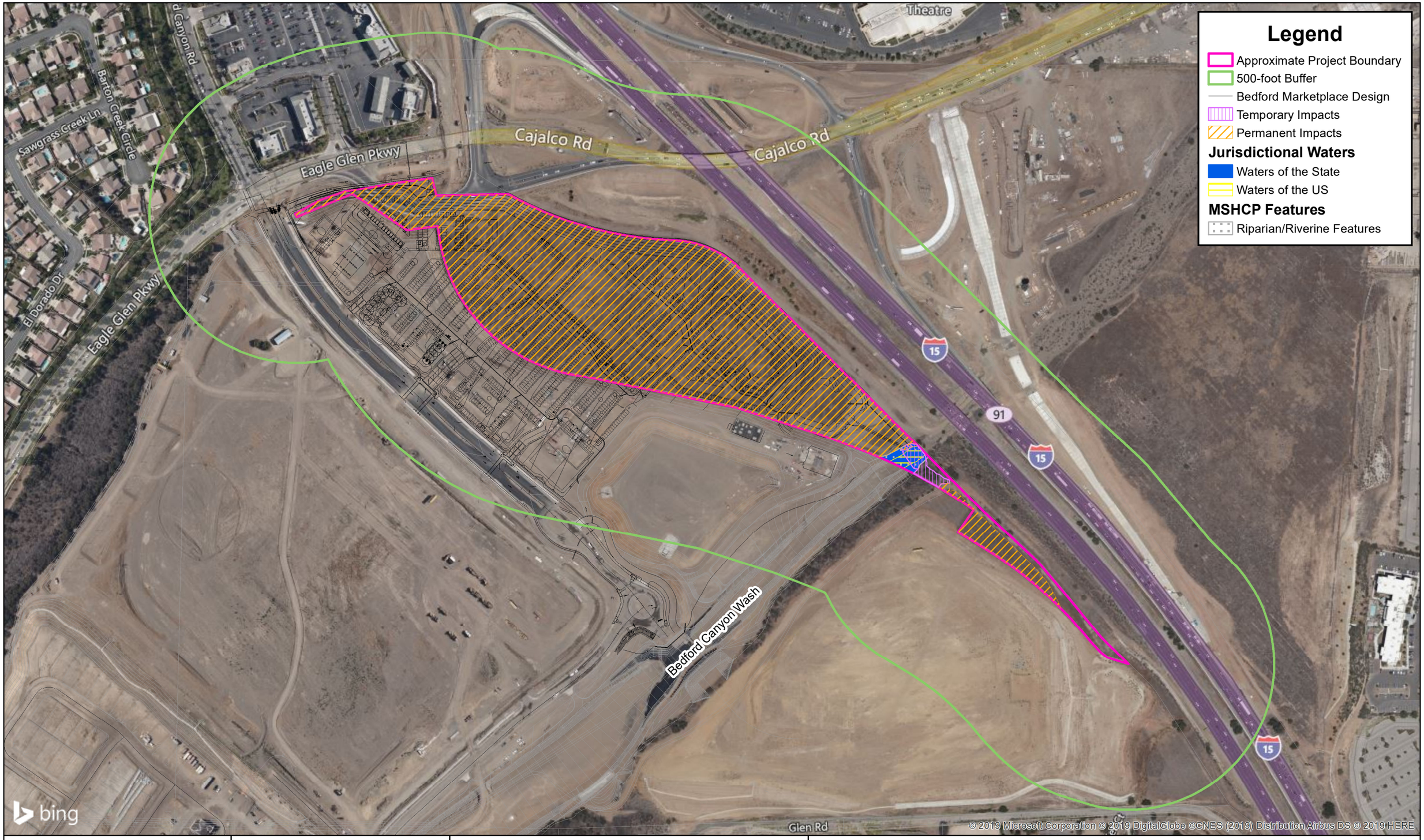
0 75 150 300 450 600 Feet
1 inch = 300 feet

Data Source: Bings Map
Field Visit (06/27/19)
Hunsaker (08/08/19)

Guardian Capital: Bedford Marketplace

Alternative 1: Off-site Dirt Import Jurisdictional and MSHCP Feature Impacts

FIGURE 11



GIS Prepared By:
Carlson SLS

Created: October 7, 2019

0 75 150 300 450 600 Feet
1 inch = 300 feet

Data Source: Bings Map
Field Visit (06/27/19)
Hunsaker (09/05/19)

Guardian Capital: Bedford Marketplace

Alternative 2: PA 14 Dirt Import Jurisdictional and MSHCP Feature Impacts

FIGURE 12

APPENDIX A

Focused Survey Results

Results of Focused Burrowing Owl Survey for the Bedford Marketplace Project

***Prepared for*:**

Guardian Capital
5780 Fleet Street, Suite 225
Carlsbad, CA 92008
Contact: Glen Powles



Prepared by:

Carlson Strategic Land Solutions
327134A Paseo Espada, Suite 323
San Juan Capistrano, CA 92675
Phone: (949) 542-7042
Contact: Brianna Bernard

August 2019

TABLE OF CONTENTS

1.0 Introduction 3

1.1 Project Terms 3
1.2 Project Location 3
1.3 Existing and Historical Land Use 4
1.4 MSHCP Survey Requirements for the Burrowing Owl 4

2.0 Methodology 5

2.1 Focused Burrow Survey 5
2.2 Focused Burrowing Owl Survey 6

3.0 Results 6

4.0 Discussion 7

5.0 Certification 8

6.0 Literature Cited 9

FIGURES

Figure 1 Regional Map
Figure 2 Project Vicinity Map
Figure 3 Transect and Burrow Map

APPENDIX

Appendix A Site Photographs

ACRONYMS, ABBREVIATIONS, AND GLOSSARY OF TERMS

BUOW	Burrowing Owl
CDFW	California Department of Fish and Wildlife
CNDDB	California Natural Diversity Database
MSHCP	Western Riverside Multiple Species Habitat Conservation Plan
Project	Bedford Marketplace Project
SLS	Carlson Strategic Land Solutions

1.0 Introduction

On behalf of Bedford Marketplace, LLC (Guardian Capital), Carlson Strategic Land Solutions (SLS) prepared this Focused Burrowing Owl Results Report, which documents the results of the focused protocol Burrowing Owl (*Athene cunicularia [BUOW]*) surveys for the proposed Bedford Marketplace Project (Project). The Project is located on approximately 18-acres in the City of Corona. The Focused BUOW Report incorporates the findings from the focused burrow and BUOW field surveys within the Study, which is comprised of the 18-acre Project site and surround 500-foot buffer. The protocol survey was conducted following the *Burrowing Owl Survey Instructions for the Western Riverside County Multiple Species Habitat Conservation Plan Area* (County of Riverside 2006). The purpose of the survey was to identify presence or absence of BUOW, suitable burrows and/or burrow surrogates, and any other sign of BUOW within the Study Area.

1.1 Project Terms

The following terms will be used throughout this document and are defined as follows:

- Project site: the approximately 18-acre Bedford Marketplace Project site.
- Study Area: the area evaluated during the field survey, including the approximately 18-acre Project site and the surrounding 500-feet (150-meters).
- Project Vicinity: intended to be a general term to describe the broader area surrounding the Study Area.

1.2 Project Location

The Project Site is located in the Bedford Canyon area of the Santa Ana Mountain foothills in the southeastern portion of Corona. The City of Corona is generally situated southwest of the City of Riverside, south of the City of Norco, and north of the City of Lake Elsinore in Riverside County, California (Figure 1). Areas surrounding the Project Site include the I-15 freeway to the east, Arantine Hills Specific Plan to the south and west; and Cajalco Road to the north (Figure 2). The Project Site is located within the United States Geological Survey (USGS) 7.5-Minute Topographic Map *Corona South* Quadrangle.

The Project Site is owned by the Riverside County Transportation Commission and has Assessor's Parcel Numbers (APN) 279-240-033 and 279-240-019.

Access to the Project site is from the residential project referred to as Bedford, located to the west of the Project site, off Eagle Glen Parkway via Hudson House Drive. Directions to the Project site from Interstate 15 (I-15) is to exit Cajalco Road and head west onto Eagle Glen Parkway. Access is obtained via Hudson House Drive.

1.3 Existing and Historical Land Use

The overall Study Area has historically been farmed for citrus production between 1962 and 2007. Prior to the 1962 aerial photograph, the Project Site was vacant land. The former agricultural operation has reverted to ruderal vegetation. The Project site is located between the new residential community of Bedford within the Arantine Hills Specific Plan (AHSP), which has been graded, and the I-15 freeway, including the Cajalco Interchange, which is currently under construction.

Bedford Canyon Wash, located to the south of the Project Site, is an ephemeral wash with a sandy bottom and sparsely vegetated alluvial fan sage scrub and non-native vegetation. The Wash receives flows from the Santa Ana mountains, through the Eagle Glen Golf Club, through the AHSP area, continuing downstream to Temescal Creek and ultimately the Santa Ana River. As part of implementation of the AHSP, Bedford Wash has been widened and improved with buried rip-rap along the banks and buried grade control structures to control erosion and scour. Two concrete crossings (upstream and downstream) provide access to the south side of the Wash and the associated maintenance access road. Restoration of Bedford Wash includes planting with an alluvial fan sage scrub seed mix.

1.4 MSHCP Survey Requirements for the Burrowing Owl

The Project site is found within the MSHCP BUOW survey area. The BUOW is designated as a "Covered Species Adequately Conserved" under MSHCP, but with specific survey/conservation requirements as described in Volume I, Section 6.3.2 of the MSHCP and species-specific objectives. Pursuant to the MSHCP, if a site occurs within the BUOW survey area, and suitable habitat is present, then focused surveys shall be conducted following the *Burrowing Owl Survey Instructions for the Western Riverside County Multiple Species Habitat Conservation Plan Area* (County of Riverside 2006). The survey instructions note the following steps to the MSHCP BUOW assessment:

- Step I: Habitat Assessment
- Step II: Locating Burrows and Burrowing Owls
    - » Part A: Focused Burrow Survey
    - » Part B: Focused Burrowing Owl Surveys (a total of 4 separate surveys)

Step I of the survey instructions requires that an assessment be conducted to determine the presence of suitable habitat for the BUOW. The habitat assessment must be conducted by walking the Project site and surrounding 500-foot buffer, where feasible. Habitat for the BUOW is varied and includes short-grass prairies, grasslands, lowland scrub, agricultural lands (particularly rangelands), coastal dunes, desert floors, and some artificial open areas. BUOW require large open expanses of sparsely vegetated areas with an abundance of active small mammal burrows. The mammal burrows are often modified and enlarged. For nesting BUOW,

one burrow is typically selected for use; however, satellite burrows are usually found within the immediate vicinity of the nest burrow within the defended territory of the owl.

Pursuant to MSHCP Section 6.3.2 and the methods are used to detect and identify BUOW included observation of key signs identified by the *California Burrowing Owl Consortium (CBOC).* This includes observation of key signs such as sight, scat, tracks, burrows, nests, and calls. All encountered burrows or structure entrances, suitable or non-suitable, were checked for the presence of BUOWs, molted feathers, cast pellets, prey remains, eggshell fragments, tracks, or excrement at or near a burrow entrance. Natural or man-made structures that could support BUOWs were also surveyed when present.

Once a basis for suitability for BUOW is determined, the presence/absence of suitable burrows is to be determined during Step II of the MSHCP Survey Instructions. Step II surveys must be conducted during breeding season (March 1 through August 31). All surveys are to be conducive to observing owls outside their burrows and detecting BUOW signs. Surveys shall not be conducted during rain, high winds (>20mph), dense fog.

As outlined within Step II of the MSHCP Survey Instructions, Step II is separated into two parts, Part A and Part B. Part A includes the detailed focused burrow survey, which consists of systematic survey for suitable burrows to support BUOW. This includes mammal burrows as well as suitable artificial and/or manmade structures. The pedestrian survey transects were spaced approximately 10 to 15 meters apart to allow 100 percent visual coverage of the ground surface. The locations of suitable habitat, potential owl burrows and key signs should be mapped and recorded.

Part B is only conducted if suitable burrows and habitat is present as identified during Part A.

2.0 Methodology

SLS biologist conducted the initial habitat assessment on June 27, 2019 to determine the locations of suitable habitat. Based on this assessment, it was determined the Project site contained suitable habitat, therefore three (3) additional focused BUOW surveys were conducted on July 8, July 25, and August 1, 2019 pursuant to MSHCP Section 6.3.2, MSHCP Protocol Survey Instructions.

2.1 Focused Burrow Survey

Prior to the field survey, available literature and databases including the California Natural Diversity Database (CNDDB), were reviewed to identify sensitive habitats and special status wildlife species, including BUOW in the vicinity of the Study Area. Consistent with the MSHCP Survey Instructions, a focused burrow survey was conducted on June 27, 2019 and pedestrian survey transects were spaced approximately 10 to 15 meters apart to allow 100 percent visual coverage of the ground surface.

According to the MSHCP guidelines, the biologist should also walk the perimeter of the property, which consists of a 150-meter (approximately 500 feet) buffer zone around the Project boundary. If permission to access the buffer area cannot be obtained, the biologist shall not trespass, but visually inspect adjacent habitats with binoculars. Parcels of land that could not be accessed (e.g. private property) were viewed using binoculars from vantage points to survey for BUOW activity or signs thereof, as well as other nesting bird activity.

2.2 Focused Burrowing Owl Survey

If no potential suitable BUOW burrows were observed within the Project Study Area or the 150-meter buffer area then Step II Part B, the focused BUOW surveys, are not required per to the BUOW Survey Instructions.

3.0 Results

Step I Habitat Assessment was conducted on June 27, 2019 to determine suitable Habitat. Based on the Habitat Assessment it was determined the Project site contains suitable habitat. Step II, Part A and B of the MSHCP Survey Instructions took place on July 8, July 25, and August 1, 2019. Each of the survey efforts were conducted in the morning between 7:15 a.m. and 11:50 a.m. and were not performed during periods of excessive or abnormal heat, wind, rain, or other inclement weather. Temperatures during the survey ranged between 64° F and 95° F, with predominant sunny, clear skies and 0-2 mph winds. The survey was conducted during typical BUOW peak activity time and was not conducted during rain, high winds (> 20 miles per hour), or dense fog >75%. Prior to the commencement of the survey, SLS biologist scanned the Study Area using binoculars to look for BUOW. The Study Area was assessed for the suitability to support BUOWs and all suitable burrows were inspected for signs of use by BUOWs. The survey involved walking through suitable habitat within the Study Area (the Project site and a 500-foot buffer). Pedestrian survey transects were spaced approximately 10 to 15 meters apart to allow 100 percent visual coverage of the ground surface (Figure 3).

No BUOWs or evidence of BUOWs were observed on site within the Study Area during the focused survey. A majority of the Project site was characterized by actively maintained ruderal fields, lacking necessary sized burrows and dense vegetation cover to provide suitable nesting habitat for BUOW. Much of the 500-foot buffer is developed. California ground squirrels (*Spermophilus beecheyi*) and their burrows were observed within the Study Area. These burrows were actively utilized by the California Squirrels and contained no BUOW or keys signs (sight, whitewash, burrows, bones, feathers, pellets, nests, and calls). Furthermore, the Project site is annually maintained for fire abatement and the property adjacent to the Project site has active construction and grading activities, including the I-15/Cajalco Interchange. Therefore, based on the lack of suitable BUOW burrows, routine maintenance and mowing, and adjacent construction activity, it is determined that the Project site is not occupied by BUOW.

All wildlife species encountered visually or audibly during the field survey were identified and recorded in field notes. Photographs were taken to document existing conditions within the Study Area; photo-pages are attached (Appendix A).

The animal species or signs thereof observed during the SLS survey are listed below:

Birds:

- American crow (*Corvus brachyrhynchos*)
- Anna's hummingbird (*Calypte anna*)
- black phoebe (*Sayornis nigricans*)
- California quail (*Callipepla californica*)
- California towhee (*Melozone crissalis*)
- house finch (*Haemorhous mexicanus*)
- mourning dove (*Zenaida macroura*)
- red-tailed hawk (*Buteo jamaicensis*)
- song sparrow (*Melospiza melodia*)
- turkey vulture (*Cathartes aura*)
- California Horned Lark (*Eremophila alpestris actia*)
- western scrub jay (*Aphelocoma californica*)

Mammals:

- California ground squirrel (*Spermophilus beecheyi*)
- desert cottontail (*Sylvilagus audubonii*)

Reptiles:

- western fence lizard (*Sceloporus occidentalis*)

4.0 Discussion

While a majority of the Study Area consist of ruderal vegetation, no BUOWs, suitable sized burrows, or key diagnostic signs (i.e., whitewash, pellets, bones, feathers, etc.) of BUOWs were observed within the Study Area. California ground squirrels and their burrows were observed within the Study Area. However, these burrows are actively utilized by California ground squirrels and contained no BUOWs or key diagnostic signs (i.e., whitewash, pellets, bones, feathers, etc.) of BUOWs. Furthermore, the Project site is annually maintained for fire abatement and the property adjacent to the Project site has active construction and grading activities associated with the I-15/Cajalco Interchange. Therefore, based on the lack of suitable BUOW burrows, routine maintenance and mowing, lack of proper vegetation cover, and adjacent construction activities, it is determined the Project site is not occupied by BUOW.

Based on the results of the field survey, the Study Area is not considered to be occupied by BUOWs. However, since the BUOW is a migratory species the Project will be required to conduct

a 30-day pre-construction survey for the BUOW. The following shall take the following measure to avoid impacts to BUOW.

- Pre-construction surveys for BUOW within the survey area where suitable habitat is present shall be conducted by a qualified biologist within 30 days prior to the commencement of ground disturbing activities. If active BUOW burrows are detected during the breeding season, all work within 300 feet of any active burrow will be halted until that nesting effort is finished. The on-site biologist will review and verify compliance with these boundaries and will verify the nesting effort has finished. Work can resume when no other active BUOW burrows nests are found.

  If active BUOW burrows are detected outside the breeding season or during the breeding season and its determined nesting activities have not begun, then passive and/or active relocation may be approved following consultation with the City. The installation of one-way doors may be installed as part of a passive relocation program. BUOW burrows shall be excavated with hand tools by a qualified biologist when determined to be unoccupied, and back filled to ensure that animals do not re-enter the holes/dens. Upon completion of the survey and any follow-up construction avoidance management, a report shall be prepared and submitted to the City for mitigation monitoring compliance record keeping.

5.0 Certification

I hereby certify that the statements furnished above and in the attached exhibits present data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Signed:  Dated: 08/09/2019

6.0 Literature Cited

California Burrowing Owl Consortium (CBOC). Burrowing Owl Survey Protocol and Mitigation Guidelines. 1993.

CDFW (California Department of Fish and Wildlife). 2019. Life History Accounts and Range Maps – California Wildlife Habitat Relationship System. Retrieved from: http://www.dfg.ca.gov/biogeodata/cwhr/cawildlife.aspx.

CDFW (California Department of Fish and Wildlife). 2019. RareFind, California Department of Fish and Game, California Natural Diversity Database (CNDDB). State of California, The Natural Resources Agency, Department of Fish and Game, Biogeographic Data Branch, California Natural Diversity Database, Sacramento, CA.

CDFW (California Department of Fish and Wildlife), Natural Diversity Database. 2019. Special Animals List. Periodic publication. 67 pp.

National Geographic Society. 2011. Field Guide to the Birds of North America, 6th Ed. National Geographic Society, Washington, D.C.

Riverside, County of. June 2003. Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). Prepared by Dudek.

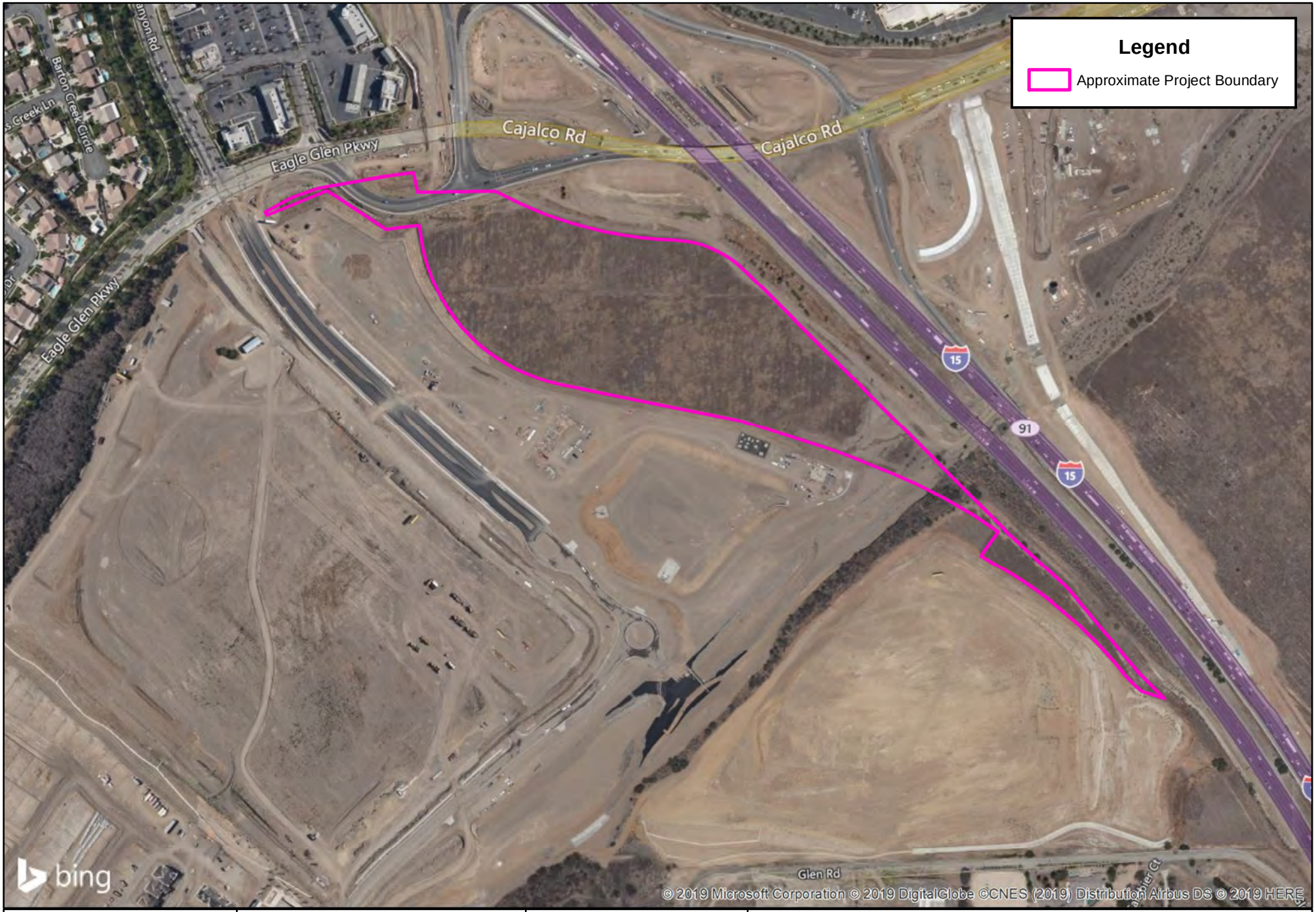
Riverside, County of. 2006. Burrowing Owl Survey Instructions for the Western Riverside Multiple Species Habitat Conservation Plan Area.

Figures



GIS Prepared By: Carlson SLS Created: August 2, 2019	0 1,250 2,500 5,000 Feet 1 inch = 5,000 feet	Data Sources: Bing Maps	***Guardian Capital: Bedford Marketplace*** Regional Map

FIGURE 1



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

0 100 200 400 600 800 Feet

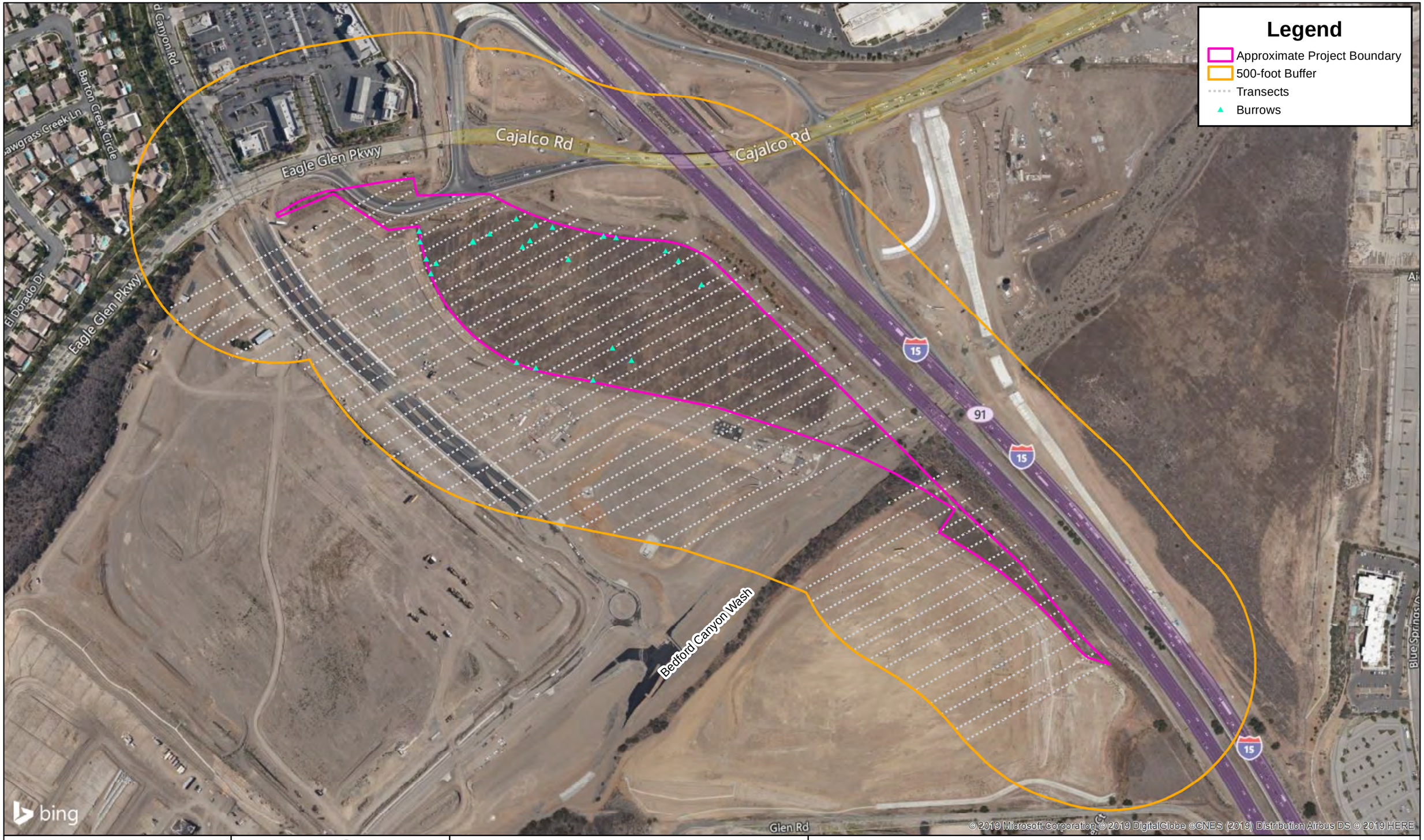
1 inch = 400 feet

Data Source: Bing Maps

Guardian Capital: Bedford Marketplace

Vicinity Map

FIGURE 2



GIS Prepared By:
Carlson SLS

Created: August 2, 2019

0 75 150 300 450 600 Feet
1 inch = 300 feet

Data Source: Bings Map
Field Visit (06/27/19)
Field Visit (07/08/19)
Field Visit (07/25/19)
Field Visit (08/01/19)

Guardian Capital: Bedford Marketplace

Transect and Burrow Map

FIGURE 3

APPENDIX A

Representative Photographs



Looking north-east over the Project site containing ruderal vegetation.



Looking south at the Project site containing ruderal vegetation.



Looking east at the Project site within the ruderal vegetation.



Looking north-west at the Project site within the ruderal vegetation.



Typical size of Burrow observed onsite actively utilized by the California Squirrel.



Looking south-east at the disturbed areas within the Study Area.



Looking south at the disturbed areas within the Study Area.



Looking south-west within the surrounding 500-foot buffer.

APPENDIX B

Representative Photographs of Community Classifications



GIS Prepared By:
Carlson SLS

Created: July 3, 2019

0 50 100 200 300 400 Feet
1 inch = 200 feet

Data Source: Bings Map (2016)

Guardian Companies

Photograph Index Sheet



Photostation 1.



Photostation 2.



Photostation 3.



Photostation 4.



Photostation 5.



Photostation 6.



Photostation 7.



Photostation 8.



Photostation 9.



Photostation 10.



Photostation 11.



Photostation 12.

APPENDIX C

Special Status Plant Species Potential Occurrence Determination

APPENDIX D

Plant Species Recorded During the Field Surveys

APPENDIX E

Special Status Wildlife Species Potential Occurrence Determination

APPENDIX D-1:

Cultural and Paleontological Resources Assessment

This Page Intentionally Left Blank

Cultural and Paleontological Resources Assessment

Bedford Canyon Marketplace
(Arantine Hills Specific Plan Amendment No. 3)

City of Corona, Riverside County, California

Prepared for:

Mr. Glen L. Powles
Guardian Capital
5780 Fleet Street, Suite 225
Carlsbad, CA 92008

Prepared by:

Curt Duke, Megan Wilson, and Benjamin Scherzer
Duke Cultural Resources Management, LLC
18 Technology Drive, Suite #103
Irvine, CA 92618
(949) 356-6660
www.DukeCRM.com

Duke CRM Project Number: C-0300

August 9, 2019

Per California Government Code 6254.10 archaeological site location information is exempt from the California Public Records Act. Therefore archaeological site location information should be kept confidential and not be made available for public view.

TABLE OF CONTENTS

TABLE OF CONTENTS i
MANAGEMENT SUMMARY ii
INTRODUCTION 1
Project Description 1
Project Location 1
SETTING 1
Natural 1
Cultural 2
Prehistory 2
Ethnography 4
History 5
METHODS 6
Record Search 6
Field Survey 6
Personnel 7
RESULTS 7
Records Search 7
Cultural Resources 7
Paleontological Resources 8
Additional Research 9
Previous Arantine Hills Specific Plan Reports 9
Historic Map and Aerial Photograph Analysis 9
Field Survey 10
Isolated Artifact 10
IMPACTS ANALYSIS AND RECOMMENDATIONS 12
Paleontological Resources 12
Cultural Resources 12
REFERENCES 14

Figures:

Figure 1: Close up of Bedford Canyon Wash sediments 11
Figure 2: Overview of cliff immediately east of Bedford Canyon Wash, view east 11
Figure 3: Northwest area of the Project, view east (note elevation change) 11
Figure 4: Center of Project area, on access road, view south 11
Figure 5: East end of Project, plowed area, view west 11
Figure 6: Close up of mano observed 11

Tables:

Table 1: Prior Cultural Resource Studies Located within One Mile of the Project 7
Table 2: Cultural Resources within One Mile of the Project 8
Table 3: Paleontological Sensitivity by Age and Geologic Unit 9

Appendix

Appendix A: Report Maps
Appendix B: Resumes
Appendix C: CONFIDENTIAL DPR Form

MANAGEMENT SUMMARY

Duke Cultural Resources Management, LLC (DUKE CRM) is under contract to Bedford Marketplace, LLC to provide cultural and paleontological resources services for the Bedford Canyon Marketplace Project (Arantine Hills Specific Plan Amendment No. 3) (Project), located in the Bedford Canyon area of the Santa Ana Mountain foothills in the southeastern portion of the City of Corona, Riverside County, California. The Project boundaries encompass approximately 27.8 acres. Guardian Capital proposes to amend the Arantine Hills Specific Plan (AHSP) to increase the boundary of the AHSP by approximately 17.7 acres. The purpose of this report is to document efforts made to comply with the California Environmental Quality Act (CEQA).

The cultural and paleontological resources assessment includes background research and a field survey to identify cultural and paleontological resources. The cultural resource record search did not reveal any cultural resources within the Project boundary; however, seventeen previously recorded cultural resources were identified within a one-mile buffer of the project. Multiple fossil localities were documented in the vicinity of the Project. The field survey identified one isolated prehistoric artifact, a trifacial granite mano/shaping tool, within the Project area west of the Bedford Canyon wash.

There is a high sensitivity for paleontological resources in the Project. Deposits of high paleontological sensitivity may be encountered in deep ground excavation (greater than 10 feet) in the north portion of the project, and in ground disturbance at the surface in the southern portion of the Project. This ground disturbance would have the potential to impact unique paleontological resources. As a result, DUKE CRM recommends paleontological monitoring for any ground disturbance in APN 279-240-019 south of the Bedford Canyon Wash and for ground disturbance deeper than 10 feet b.g.s. throughout the Project area west of the Bedford Canyon Wash.

Our research shows that the Project was previously farmed for citrus production for multiple decades. However, one prehistoric isolated artifact was observed within the Project during the 2019 field survey. Additionally, five artifacts and one potential archaeological feature were observed during construction monitoring in 2018 on the adjacent AHSP property. DUKE CRM recommends that ground disturbance may have the potential to impact prehistoric and historic archaeological resources and recommends archaeological monitoring during ground disturbance for the Project.

If human remains are encountered, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a Most Likely Descendant (MLD). With the permission of the landowner or his/her authorized representative, the MLD may inspect the site of the discovery. The MLD shall complete the inspection within 48 hours of notification by the NAHC. The MLD may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

INTRODUCTION

Duke Cultural Resources Management, LLC (DUKE CRM) is under contract to Bedford Marketplace, LLC to provide cultural and paleontological resources services for Bedford Canyon Marketplace Project (Arantine Hills Specific Plan Amendment No. 3) (Project), located in the Bedford Canyon area of the Santa Ana Mountain foothills in the southeastern portion of the City of Corona, Riverside County, California. The Project boundaries encompass approximately 27.8 acres. The purpose of this report is to document efforts made to comply with the California Environmental Quality Act (CEQA).

Project Description

The Applicant, Bedford Marketplace, LLC, proposes to amend the Arantine Hills Specific Plan (AHSP Amendment No. 3) to increase the boundary of the AHSP on its eastern most side by approximately 17.7 acres. The entire Project area is 27.8 acres, where approximately 10 acres was included in the AHSP (located on the northeastern portion of the current Project area, west of the newly constructed Bedford Canyon Road) and designated for Commercial use. Approximately 5.82 acres of the Modified Project Site would be designated Open Space within the AHSP. The Applicant is requesting a General Plan Amendment, Zone Change, Specific Plan Amendment, Parcel Map, Construction Hours/Noise Variance, Precise Plan, Conditional Use Permit, and Supplement to the previously certified AHSP EIR.

The additional 17.7 acres is located on a lower elevation than the existing 10-acre graded commercial pad included in the AHSP. The additional acreage on the eastern edge of the Project area is also lower in elevation than the newly constructed sewer lift station within the AHSP, such that at the current elevation, the added acreage would not gravity flow to the lift station, resulting in the need for additional pumps. To bring Project area up to an elevation similar (within five feet) of the existing 10-acre commercial pad and at an elevation where sewer could gravity flow to the existing lift station, import of approximately 440,000 cubic yards of dirt is required. Prior to the import operations, the eastern portion of the Project area (the additional 17.7 acres to the AHSP) will require the over-excavation of approximately 4-6 feet below existing ground surface.

Project Location

The Project site is situated in the Bedford Canyon area of the Santa Ana Mountain foothills in the southeastern portion of Corona. The City of Corona is generally situated southwest of the City of Riverside, south of the City of Norco, and north of the City of Lake Elsinore in Riverside County, California (Map 1). Areas surrounding the Project include the AHSP to the north and west; undeveloped land and rural residential to the south; and the Eagle Glen Golf Club to the west. The Project is located within the United States Geological Survey (USGS) 7.5-Minute Topographic Map *Corona South* Quadrangle (Map 2). The eastern most 17.7 acres is owned by the Riverside County Transportation Commission (RCTC) and has Assessor's Parcel Numbers (APN) 279-240-033 and 279-240-019. The Project boundary overlaid onto an aerial photograph is shown in Map 3. All Project maps are located in Appendix A.

SETTING

Natural

California is divided into 11 geomorphic provinces, each naturally defined by unique geologic and geomorphic characteristics. The Project is located in the northwestern portion of the Peninsular Ranges geomorphic province. The Peninsular Ranges province is distinguished by northwest trending mountain ranges and valleys following faults branching from the San Andreas Fault. The Peninsular Ranges are bound to the east by the Colorado Desert and extend north locally to the Santa Monica Mountains (Yerkes and Campbell, 2005; Hillhouse, 2010), west into the submarine continental shelf, and south to the California state line.

The Project area is located between two topographic highs, the Temescal Mountains to the east and the Santa Ana Mountains to the south. The Temescal Mountains are a portion of the Peninsular Ranges Batholith known as the Perris Block. The Perris Block is a large, relatively unbroken, body of igneous rock that originally formed underground between 120 and 105 million years ago (Todd et al., 2003). The Santa Ana

Mountains are the result of two geologic processes. First, an episode of folding in the Plio-Pleistocene (approximately 2.5 million years ago) uplifted the future Santa Ana Mountains and caused an accompanying down-drop to the northeast that created the current valley that contains Corona (Gray, 1961). In the late Pleistocene (approximately 10,000 years ago), the formation of the Corona and Elsinore Fault uplifted the Santa Ana Mountains and resulted in abundant sediment being eroded off the mountains and deposited onto the valley floor (Gray, 1961). In the area of Corona, this sediment was deposited as one large fan, the Corona Fan that essentially defines the borders of the modern City of Corona (Gray, 1961). The Project area is located in an incised valley that has been cut into the southeastern portion of the Corona Fan.

The geology in the vicinity of the Project has been mapped by Morton and Miller (2006) at a scale of 1:100,000. A review of this map indicated that the Project area is located on two geologic units: young alluvial fan deposits (*Qyf*) and old alluvial fan deposits (*Qof*) (Figure 4). Young alluvial fan deposits (*Qyf*) are composed of unconsolidated to moderately consolidated silt, sand, pebbly cobbly sand, and bouldery alluvial fan deposits of late Pleistocene (2.5 million years ago to 11,700 years ago) to Holocene (11,700 years ago to today) Epochs, with local deposits dominated by cobbles and boulders (Morton and Miller, 2006). These deposits occur in most of the Project area. Old alluvial fan deposits (*Qof*) are composed of moderately to well-consolidated silt, sand, and gravel, with local deposits dominated by sand to boulder size clasts (Morton and Miller, 2006). These deposits occur in the southern "finger" of the eastern 17.7 acres in APN 279-240-019, south of Bedford Canyon Wash.

Cultural

Prehistory

Two primary regional schemas are commonly cited in the archaeological literature for western Riverside County where the Project is located. These schemas or syntheses generalize the presence or absence of certain artifact types into explanatory frameworks of temporal chronologies and/or subsistence practices. Schemas are necessary because many archaeological sites lack absolute datable material (ex. Carbon for radiometric ^{14}C dating) and so researchers need to cross-date sites by comparison to either coastal or desert chronologies with established chronological sequences backed by absolute dates. In western Riverside County, it is thought to be the meeting ground of both coastal and inland desert schemas and neither exclusively explains prehistoric finds.

The first schema, advanced by Wallace (1955), defines four cultural horizons for the southern California coastal province, each with characteristic local variations:

I. Early Man (~9000–8500 B.P.) is a hunting culture based on almost exclusive evidence of chipped-stone hunting materials: dart points, scrapers, choppers, and bifaces.
II. Milling Stone (8500–4000 B.P.) reflects a change to a more sedentary, plant-collecting lifestyle as evidenced by the introduction and dominance of milling stone artifacts and a decrease in well-made projectile points.
III. Intermediate (4000–1500 B.P.) is characterized by a larger dependency on hunting, use of the dart and atlatl, and the shift from using the mano/metate to mortar/pestle. However, knowledge of this horizon suffers from lack of knowledge about what occurred during this time, not a lack of inhabitants along the southern California coast.
IV. Late Prehistoric (1500~200 B.P.) contains a more nuanced artifact assemblage indicative of a more complex lifestyle and an increase of population. This horizon is characterized by an increase in bow and arrow use, steatite containers, pottery, circular fish hooks, perforated stones, asphaltum, diversified bone tools, ample shell ornaments, and elaborate mortuary customs.

Warren and Crabtree (1986) employ a more ecological approach to the deserts of southern California, defining five traditions in prehistory:

I. Lake Mojave (12000–7000 B.P.)
II. Pinto (7000–4000 B.P.)

III. Gypsum (4000–1500 B.P.)
IV. Saratoga Springs (1500–800 B.P.)
V. Shoshonean (800~200 B.P.)

Warren and Crabtree (1986) viewed cultural continuity and change in terms of various significant environmental shifts, defining the cultural ecological approach for archaeological research of the California deserts. The authors viewed changes in settlement pattern and subsistence as cultural adaptations to a changing environment, beginning with the gradual environmental warming in the late Pleistocene, the desiccation of the desert lakes during the early Holocene, the short return to pluvial conditions during the middle Holocene, and the general warming and drying trend, with periodic reversals, that continues to this day. The work by Warren and Crabtree (1986) is built upon, in part, by Warren (1980) in which he argued for a chronology based on projectile points as period markers backed by radiocarbon assays providing absolute dates.

The two schemas contrast in important ways. The units employed by Warren are "traditions," and in contrast to Wallace (1955), traditions may be spatially restricted but display temporal continuity. For Wallace, "horizons" or "periods," are extensive through space but restricted in time. More recent schema have been attempted to reconcile these differences. More recently, Koerper and Drover (1983) synthesized chronologies for coastal southern California and employed Wallace's (1955) horizon terminology but use radiometric data to sequence stylistic changes observed in the artifact assemblages, which they interpreted as material indication of cultural change through time. Regardless of the overall schema to best explain the prehistory of western Riverside County, the region can be understood within broad chronological frameworks and as the meeting ground of the coastal and desert subsistence patterns.

Early Holocene (11,600 – 7,600 BP)

Traditional models of the prehistory of California hypothesize that its first inhabitants were the big game hunting Paleoindians who lived at the close of the last ice-age (~11,000 years before present [BP]). As the environment warmed and dried, large Ice Age fauna died out, requiring adaption by groups to survive. The western Great Basin and deserts of southern California were characterized by large pluvial (rainfall-fed) lakes, streams, marshes, and grasslands. The human response to this environment is known as the Western Pluvial Lakes Tradition (WPLT) (Moratto 1984). The WPLT is generally identified by an advanced flaked-stone industry of foliate knives/points, Silver Lake and Lake Mojave points, lanceolate bifaces, and long-stemmed points. Other flaked-stone tools include crescents, scrapers, choppers, scraper-planes, hammer stones, cores, drills, and gravers. People of this period hunted diverse populations of smaller animals and collected a wide number of plants from diverse eco-zones. Importantly, this period lacks widespread evidence of milling stones, and, therefore, hard seed processing was likely not widely practiced. Sites are generally found along the shores of former pluvial lakes, marshes, and streams (Moratto 1984). The desert manifestation of the WPLT is the Lake Mojave Complex, while along the coast the WPLT is seen in the San Dieguito Complex. Along the coast, rising sea levels created bays and estuaries. Following initial settlement along the coast, groups adopted marine subsistence including fish and shellfish. These shell middens contain flaked cobble tools, metates, manos, discoidals, and flexed burials and allowed for a semi sedentary life style (Byrd and Raab 2007). Eventually, shellfish became the primary source of food, while plant gathering, hunting and fishing were less important.

The Paleocoastal Tradition (PCT) has many similarities to the WPLT but it reflects a coastal adaptation (Davis et al. 1969). PCT sites are located along bays and estuaries. Subsistence patterns indicate the eating of mollusks, sea mammals, sea birds, and fish in addition to land plants and animals. The argument for a PCT has gained momentum. This is based on a vast amount of recent research that has been conducted along the California coast and the Channel Islands (Byrd and Raab 2007). A recent study dates habitation on San Miguel Island back to ~11,300 BP (Daisy Cave), while a site on San Clemente (Eel Point) shows that a Paleocoastal Tradition was entrenched at Eel point in the early Holocene, with the hunting of seals, sea lions, and dolphins, as well as the gathering of shellfish.

Middle Holocene (7,600 – 3,650 BP)

The middle Holocene is a time of change and transition. As conditions continued to warm and dry, lakes and streams in the desert disappeared. This resulted in a shift in subsistence strategies, namely a shift to the gathering of plant seeds, grasses and shellfish along the coast as the primary dietary staple. Fishing and the hunting of smaller animals played a less important role in day to day activity. This shift in subsistence is what Wallace named the Millingstone Horizon (Wallace 1955) and this name has continued among archaeologists working on the coastal province of southern California. Large habitations are seen in the inland areas and considerable variability is seen along coastal occupation of southern California. Occupation revolved around seasonal and semi-sedentary movements in coastal Orange and San Diego counties. Trade networks are postulated by researchers that have dated Ollivella grooved rectangle shell beads as far north as central Oregon dating to 4900-3500 BP (Byrd and Raab 2007). Characteristics of the middle Holocene sites include ground stone artifacts (manos and metates) used for processing plant material and shellfish, flexed burial beneath rock or milling stone cairns, flaked core or cobble tools, dart points, cogstones, discoidals, and crescentics.

Late Holocene (3,650 – 233 BP)

During the late Holocene there was a migration of Takic speakers from the Great Basin into southern California. Sutton (2009) was able to show while Takic speakers did in fact physically migrate, linguistic, biological, and archaeological evidence indicates that by about 1,500 B.P., the Gabrielino language had become sufficiently distinct from its northern origins to be classified in a different branch of Takic. About this same time, the language was adopted by an existing Yuman group to the south that would become Luiseño (Sutton 2009:62). Characteristics of the late Holocene include the introduction of the bow and arrow, mortar and pestle, use of ceramics, and a change in mortuary behavior from inhumations to cremations in southern California. This was also a period of climatic fluctuation. Paleoenvironmental data show that periods of drought alternated with cooler and moister periods (Vellanoweth and Grenda 2002; Byrd and Raab 2007; Jones et al. 2004). This resulted in dynamic regional cultural patterns with considerable local variation. Byrd and Raab (2007) suggest that foragers in southern California over-exploited high-ranked food, such as shellfish, fish, marine and land mammals, and plant remains. This led to resource depression, causing people to forage more costly resources that were more abundant.

Ethnography

The Project is located in an area that was used by three Tribes: the Gabrielino, the Cahuilla, and, the Luiseño Indians. All are Takic speakers and descended from Late Prehistoric populations of the region. Takic is part of the larger Uto-Aztecan language stock which migrated west from the Great Basin (Bean and Smith 1978).

The Gabrielino are one of the least known Native American groups in California (Bean and Smith 1978; Bean and Shipley 1978). Generally, their territory included all of the Los Angeles Basin, parts of the Santa Ana and Santa Monica Mountains along the coast from Aliso Creek in the south to Topanga Canyon in the north, and San Clemente, San Nicolas, and Santa Catalina Islands. The environmental conditions within this territory are very diverse, including the following zones: interior mountains/foothills, Prairie, exposed coast, and sheltered coast. The Gabrielino lived in villages year-round and utilized smaller camps from which they could hunt and gather, likely on a seasonal basis. Villages were almost always situated near water. Gabrielino families lived in domed, round structures with thatching made from local plants. Villages were politically autonomous from other villages, while each village was led by a chief who would, at times, reign over several villages (Bean and Smith 1978).

Acorns were the most important food for the Gabrielino; although the types and quantity of different foods varied by season and locale. Other important sources of food were grass and many other seed types, deer, rabbit, jackrabbit, woodrat, mice, ground squirrels, quail, doves, ducks and other fowl, fish, shellfish, and marine mammals.

The territory of the Luiseño extended along the coast south to Agua Hedionda Lagoon, northwestward to Aliso Creek just north of San Juan Capistrano, and eastward to the Elsinore Valley and Palomar Mountain. Like other Native American groups in southern California, the Luiseño caught and collected seasonally

available food resources and led a semi-sedentary lifestyle with the majority of individuals residing at the village for the entire year (Oxendine 1983:57). Luiseño villages were generally located in valley bottoms near to water. The Luiseño had a well-developed sense of ownership (White 1963:122), and their concept of property rights included the idea of private property. Property rights covered items and land owned by the village as well as items such as houses, gardens, ritual equipment, trade beads, eagle nests, and songs that were owned by individuals. Luiseño villages were politically independent and were administered by a chief, who inherited his position from his father (Bean and Shipek 1978).

Subsistence was based primarily on seeds from local grasses, manzanita, sunflower, sage, chía, and pine nuts, as well as acorns. Seeds were dried, ground, and cooked into a mush. Seasonal camps were also established along the coast and near bays and estuaries to gather shellfish and hunt waterfowl (Hudson 1971). Game animals such as deer, rabbit, jackrabbit, wood rat, mice, antelope, and many types of birds were regularly hunted (Bean and Shipek 1978). In addition, the Luiseño utilized fire for crop management and communal rabbit drives (Bean and Shipek 1978). Small seasonal habitation sites in the area would contain quantities of fire affected rock (FAR), some burned bone, and small amounts of ground and flaked stone tools. They might be found as open sites atop knolls or ridges, or in protected areas near streams, or even in rock shelters.

Cahuilla territory included the Coachella Valley, the San Jacinto and Santa Rosa Mountain ranges. Bean and Shipek (1978) estimated that the Cahuilla numbered between 6,000 and 10,000 people at the time of Spanish Contact. Politically and ceremonially Cahuilla clans were led by a Chief or *Net*. The *Net* had charge of the sacred dance house and the sacred bundle, *masut*, which consisted of matting which was wrapped around items sacred to the clan such as ritual paraphernalia. Importantly, the *masut* was the sacred expression of each clan. A *Paha*, ritual assistant, is also found among other Takic speaking groups. The office of *Paha* varied however, as it was not always present within some of the southern-most Desert Cahuilla clans (Bean and Saubel 1972, Bean and Shipeck1978; Hooper 1920). As other Takic speaking groups did, the Cahuilla would publically gather for the naming of children, marriage, female and male initiation ceremonies, for the ascendency of a *Net*, for an Eagle-Killing Ceremony and the mourning ceremony. The mourning ceremony took place as a way to collectively mourn all those that died since the previous mourning ceremony. Each person was cremated along with his or her individual possessions in a ceremony separate from the mourning ceremony. Mourning ceremonies were one of the most important ceremonies for clan in that sacred songs were sung, sacred dances were danced, and moieties exchanged food and valued goods.

Cahuilla diet emphasized acorn, *Salvia islay*, yucca, agave and pinyon gathering, or the gathering of mesquite, cactus, and hard seeds such as screwbean, juniper and mesquite depending upon the local environment (Bean and Saubel 1972). The Cahuilla were also observed to cultivate small quantities of corn, beans, squashes, pumpkins, melons and wheat as early as 1824 by the Romero expedition. These crops and the cultivation of them potentially made their way from the Colorado River area to the Coachella Valley. The inhabitants of the Coachella did not practice flood recessional agriculture of the Colorado River groups (Bean and Lawton 1993).

History

The first Europeans to explore what would become the state of California belonged to the 1542 expedition of Juan Rodriguez Cabrillo, who sailed along and occasionally landed on the coast. Europeans are thought to have first visited portions of the interior in 1769, when Gaspar de Portola (Brown 2001) led a 62-person overland expedition from San Diego to Monterey (Cramer 1988). Two later expeditions, led by Juan Bautista de Anza in 1774 and 1775 from Sonora through southwestern Arizona and southern California, crossed the Santa Ana River at Anza Narrows in today's Santa Ana River Regional Park.

The Spanish government subsequently established missions and military outposts in San Diego in 1769 to facilitate colonization of the area and to keep rival European nations out of the area. After Mexico won independence from Spain in 1822, colonization efforts in Alta California decreased. The Spanish mission system was largely abandoned and the Mexican government bestowed land grants or ranchos to those loyal to the Mexican government including some Anglo settlers. The Mexican period (1822-1848) is largely identified

with the ranchos acquired by individuals through the land grant system as well as the secularization of the missions. Mission secularization began on July 25, 1826 with a decree by Governor Jose Maria Echeandfa and was completed by 1836 after an additional decree in 1831 (Engstrand and Ward 1995).

The end of the Mexican period in California began on June 14, 1846 when a band of American settlers supported by the American explorer John C. Fremont and his team captured Mexican General Mariano Guadalupe Vallejo in a dawn raid in Sonoma (Ide 1967, Rolle 2003). The Americans raised a flag for the "California Republic" and their actions became known as the "Bear Flag Revolt." The so-called California Republic was short-lived however, as on July 7, 1846, U.S. Navy forces captured Monterey, California, where the U.S. flag was raised (Rolle 2003). On February 2, 1848, the war between the U.S. and Mexico ended with the signing of the Treaty of Guadalupe Hidalgo, which greatly expanded U.S. territory (including California) and resulted in Mexico being paid $15 million for the land (Rolle 2003).

Although gold had been found prior to this in various parts of California, the well-publicized discovery of gold near Sutter's fort in 1848 dramatically increased the Anglo settlement of California. Despite property rights of rancho owners being secured by provisions in the Treaty of Guadalupe Hidalgo, California in the early American period experienced the transfer and subdivision of many of the ranchos as well as a shift from ranching to agriculture as the primary means of subsistence.

In 1886, the City of Corona was established by the South Riverside Water and Land Company (Duke 2010). The company developed the purchased 12,000 acres of land then known as southwestern San Bernardino County. A railroad depot and irrigation systems were put in place to transform the territory which would soon include a new citrus industry (City of Corona). As the rural community began to develop, it was referred to as South Riverside and on July 13,1896, the citizens voted for the incorporation of their small town into the newly formed Riverside County. Between 1913 and 1916 an international speedway was established which attracted over one million spectators in total during its operation. Ultimately, the speedway failed to attract additional commerce and development to the city and the speedway was shut down. Ultimately, the citrus industry would be responsible for attracting larger populations to the city (Duke 2010).

METHODS

Research materials, including historic maps, previous surveys, planning documents, ordinances, and published local and regional historical accounts were collected and reviewed.

Record Search

A record search was conducted on June 18, 2019, at the Eastern Information Center (EIC) by DUKE CRM archaeologist, Megan Wilson M.A., R.P.A. The EIC is part of the California Historical Resources Information System (CHRIS) and is located at University of California, Riverside. The records search included a review of all recorded historic and prehistoric archaeological sites within the Project area as well as a one-mile radius of the Project and included a review of cultural resource survey and excavation reports. In addition, the California State Historic Property Data File (HPD) was reviewed, which includes the National Register of Historic Places (National Register), California Register of Historical Resources (California Register), California Historical Landmarks (CHL), and California Points of Historical Interest (CPHI). The paleontological research conducted for the Project was conducted by Benjamin Scherzer, M.S. This included a paleontological records search though the Western Science Center (WSC) in Hemet. In addition, DUKE CRM paleontologist Benjamin Scherzer performed a search of the University of California Museum of Paleontology (UCMP) and San Diego Natural History Museum online collections, the online Paleobiology Database and Quaternary Faunal Mapping Project, and other published literature for fossil localities from similar deposits near the Project.

Field Survey

The goal of the pedestrian survey was to identify cultural or paleontological resources that may be within the Project boundaries. The pedestrian survey covered the entire Project area using 15 meter transects. Transects covered all areas within the Project which included areas of minimal disturbance, areas that had a moderate to

high sensitivity for cultural resources, as well as various areas of prior disturbance. Special attention was paid to rodent burrows, erosion cuts that allowed the observation of soils below the surface, including a close inspection of the approximately 15 meter high vertical cliff face along the eastern edge of the project. Digital photographs of the Project were taken, along with detailed field notes.

Personnel

Mr. Duke is the Principal Archaeologist of DUKE C R M . Mr. Duke meets the professional qualifications of the Secretary of the Interior for prehistoric and historical archaeology; he is also a Registered Professional Archaeologist (RPA) who has worked in all phases of archaeology (archival research, field survey, testing and data recovery excavation, laboratory analysis, construction monitoring) since 1994. Mr. Duke holds a Master of Arts degree in Anthropology with an emphasis in archaeology from California State University, Fullerton and a Bachelor of Arts degree in Anthropology from the University of California, Santa Cruz. Mr. Duke has worked throughout southern and Northern California and parts of Arizona and Nevada. He is included on the County's list of qualified archaeologists. Mr. Duke is the Principal Investigator and oversaw completion of all tasks and reviewed this report.

Megan Wilson conducted the records search, filed survey, produced the report maps, and drafted portions of this report. Ms. Wilson received a M.A. in Anthropology with an emphasis in archaeology from California State University, Fullerton and a B.A. degree in Anthropology from the University of California, Los Angeles. Ms. Wilson is a Registered Professional Archaeologist and GIS analyst with 8 years of experience in archaeology and cultural resources management in southern California

Benjamin Scherzer prepared the paleontology and geology sections of this report. Mr. Scherzer received a M.S. in Earth Sciences from Montana State University, Bozeman. He has 16 years of experience in paleontological research, field surveys, fossil salvage, laboratory identification, report preparation, and curatorial experience. Mr. Scherzer is a listed paleontologist with the Riverside County.

Please see Appendix B for staff resumes.

RESULTS

Records Search

Cultural Resources

On June 18, 2019, Megan Wilson conducted a records search at the EIC. One previous cultural resources study included a portion of the current Project area; however, no cultural resources were identified in the Project area. There are 36 cultural resources reports on file within one-mile of the Project. All reports that fall within the Project area are listed in Table 1.

Table 1. - Prior Cultural Report within the Project

Report No.	Author(s)	Title	Year
RI-04985	Mckenna et al.	A Phase I Cultural Resources Investigation of 500 Acres in the Bedford Canyon Area near the City of Corona of Riverside County, California	2003

Records from the EIC indicate that there are no previously recorded cultural resources mapped within the Project area. There are 17 previously recorded cultural resources within a one-mile radius of the Project area and include one prehistoric archaeological site, nine prehistoric isolates, six historic archaeological sites, and one historic resource. These resources are summarized in Table 2 below.

Table 2. Cultural Resources within One Mile of the Project

Primary No.	Trinomial	Resource Type	Resource Description	Year Recorded	Distance (mi), Direction
P-33-000883	CA-RIV-883	Prehistoric Archaeological Site	Lithic and Groundstone Scatter	1973, 1987, 1988, 2007, 2011	0.5-1, NE
P-33-003832	CA-RIV-3832	Historic Archaeological Site	Railroad, Old Santa Fe Railroad through the Temescal Valley	1990, 1996, 2001, 2005, 2006, 2011	0.5-1, NE
P-33-004112	CA-RIV-4112H	Historic Archaeological Site	Concrete foundations of an industrial plant, water conveyance system, tailings, structural debris, former location of the Owens-Illinois Glass/Sand Plant	1991, 1997, 2005, 2007	0.25-0.5,
P-33-007719	CA-RIV-6197	Historic Archaeological Site	Mine, open pit "Jones/Hoag Ranch sand deposit"	1999	0.25-0.5, W
P-33-012557		Prehistoric Isolate	Quartzite flake	1986	0.5-1, NE
P-33-012559		Prehistoric Isolate	Quartzite secondary flake	1987, 2007	0.5-1, NE
P-33-012560		Prehistoric Isolate	Dactite flake	1987	0.5-1, SE
P-33-013146		Prehistoric Isolate	Bifacial mano	Unknown	0.5-1, NE
P-33-013147		Prehistoric Isolate	Mano fragment	1990, 2007	0.5-1, NE
P-33-013148		Prehistoric Isolate	Mano/hammerstone	1990, 2007	0.5-1, NE
P-33-015322	CA-RIV-8090	Historic Resource	Historic mine/quarry, " Harlow Quarry"	2006	0.5-1, E
P-33-023790	CA-RIV-11685	Historic Archaeological Site	Refuse deposit	2013	0.5-1, N
P-33-024723	CA-RIV-12241	Historic Archaeological Site	Road, "Starne Road" segment and historic refuse deposit	2015	0.5-1, N
P-33-024724		Prehistoric Isolate	Chert core	2015	0.5-1, NW
P-33-024725		Prehistoric Isolate	Siltstone core	2015	0.5-1, NW
P-33-024726		Prehistoric Isolate	Chert flake tool	2015	0.5-1, NW
P-33-026860	CA-RIV-12617	Historic Archaeological Site	bedrock milling feature	2016	0.5-1, NE

Paleontological Resources

On July 11, 2019 the WSC performed a paleontological records search to locate fossil localities within and in the vicinity (one-mile radius) of the proposed Project area. No fossil localities were documented within or in the vicinity of the project area (Radford, 2019). The records search by B. Scherzer for fossil localities in similar deposits nearby (within three miles) produced two localities:

- "Bedford Properties" (SBCM 5.6.229-5.6.246 and 5.6.250-5.6.258) produced material from desert cottontail (*Sylvilagus audubonii*), smooth-toothed pocket gopher (*Thomomys bottae*), kangaroo rat (*Dipodomys*), pocket mouse (*Perognathus*), harvest mouse (*Reithrodontomys*), deer mouse (*Peromyscus*), pack rat (*Neotoma*), California vole (*Microtus californicus*), fox (*Vulpes*), mastodon (*Mammut americanum*), mammoth (*Mammuthus*), camel (*Camelops*), chub (*Gila*), toad (*Bufo*), pond frog (*Rana*), turtle (Chelonia), western side-blotched lizard (*Uta stansburiana*), skink (*Eumeces*), milk snake (*Lampropeltis*), pit viper (*Crotalidae*), and bird (Aves) from Pleistocene deposits at an unspecified depth and unspecified distance from the Project (Jefferson, 1991a,b).
- "Corona East" (UC-RV8601) produced material from mastodon (*Mammut*), horse (*Equus*), camel (*Camelops*), bison (*Bison*), rabbit (Lagomorpha), and multiple rodents including California vole (*M. californicus*), and pack rat (*Neotoma*) from Pleistocene deposits at an unspecified depth and unspecified distance from the Project (UCMP).

Holocene deposits are too young to have accumulated or fossilized enough biologic material to contain significant paleontological resources and are assigned a low paleontological sensitivity. However, these deposits may transition with depth to Pleistocene deposits, which are assigned a high paleontological sensitivity. The Paleontological Resources Impact Mitigation Program (PRIMP) prepared for this Project in indicates the young alluvial fan deposits (*Qaf*) are composed of Holocene deposits from the surface until approximately 10 feet below ground surface (b.g.s.), where they transition into Pleistocene deposits (Rieboldt, 2015). As a result, the young alluvial fan deposits (*Qaf*) in the Project are assigned a low paleontological sensitivity at the surface, but a high paleontological sensitivity below 10 feet b.g.s. The old alluvial fan deposits (*Qof*) are assigned a high paleontological sensitivity at the surface.

Table 3. Geologic Units and Their Paleontological Potential

Age	Geologic Unit	Fossils Present[1]	Paleontological Sensitivity
Holocene	Young alluvial fan deposits (*Qaf*)	Desert cottontail, smooth-toothed pocket gopher, kangaroo rat, pocket mouse, harvest mouse, deer mouse, pack rat, California vole, fox, mastodon, mammoth, camel, chub, toad, pond frog, turtle, western side-blotched lizard, skink, milk snake), pit viper, bird, horse, camel, bison, rabbit	Low at surface, high at depth (>10')[2]
Pleistocene			
Pleistocene	Old alluvial fan deposits (*Qof*)		High

[1]UCMP; Jefferson, 1991a,b
[2] Rieboldt, 2015

Additional Research

Previous Arantine Hills Specific Plan Reports

Reports pertaining to the AHSP not filed and/or processed at theEIC were also reviewed. These reports include the *Cultural and Paleontological Resources Assessment, Arantine Hills Specific Plan Amendment No.2, City of Corona, California* (Duke and Scherzer 2018), the *Results of Paleontological Mitigation Monitoring for the Arantine Hills Specific Plan Project, Corona, Riverside County, California* (Reiboldt 2018), the *Phase IV Archaeological Monitoring for the Arantine Hills Project*, (Tonley et al.), and the *Cultural Resources Assessment, Arantine Hills Specific Plan, City of Corona, Riverside County, California* (Duke 2010).

The results of the 2018 archaeological monitoring indicated that five isolated artifacts, one archaeological feature, and 14 isolated tribal cultural resources were observed and recorded (Tonely et al. 2018). The results for the 2018 paleontological monitoring were negative (Rieboldt 2018). The results for the original 2010 and extended 2018 cultural resources field surveys were both negative for surface cultural resources.

Historic Map and Aerial Photograph Analysis

USGS topographic maps of the Project (1948 through present) were examined for details that would aid in reconstructing the history of the Project property. Maps were obtained from the USGS TopoView website (U.S. Department of the Interior, USGS 2019). The maps available earlier than 1942 are 1:250,000 scale and do not offer suitable resolution for analysis of this type. The 1947- Present USGS Corona South, Calif. 1:24,000 maps indicate that no structures, roads, or dwellings have been built within the Project. The most substantial development in the area appears on the 1967 Corona South 7.5' Topographic map that depicts interstate 15 immediately north of the Project area. No other changes are noted on the topographic maps.

A review of available historic aerial photographs (Nationwide Environmental Title Research, LLC (NETR 2019) was conducted to document changes to the Project area as far back as 1948. At that time, the Project property was undeveloped and located within the Bedford Wash. At some time between 1948- 1966 the Project property was converted to orchards with dirt roads bisecting the northern and southern ends of the Project area. The Project area was utilized for agriculture as late as 2005 and agriculture activities were abandoned after that.

Field Survey

On July 3, 2019 a pedestrian survey of the 27.8 acres Project and was conducted by DUKE C R M Archaeologist and cross trained paleontologist Megan Wilson, M.A., RPA. The pedestrian survey covered the entire Project using 15 meter transects. Special attention was paid to rodent burrows, erosion cuts that allowed the observation of soils below the surface, including a close inspection of the approximately 15 meter high vertical cliff face (Figures 1 and 2) along the eastern boundary of the Project along the Bedford Canyon Wash. Soils are alluvial in origin, dark-brown to tan coarse sand at the surface, and contain approximately 60% gravel, cobbles, and boulders of Bedford Canyon Metasedimentary rock. Granite, quartzite, and sandstone cobbles make up less than 1% of the content. Soils at depth in the cliff face and erosion cut (Figure 1 below) appear to be a dark brown to brown, alluvial, coarse sand with the same gravel and cobble content.

Topography of the Project area is relatively flat within the confines of the canyon, with Bedford Wash bisecting the Project area on the eastern end in a southwest to northeast orientation. Although the Project is relatively flat there exist two steep changes in elevation. The first occurs on the west side where previous grading has already taken place in the original 10 -acres designated for Commcerial use by the AHSP and is approximately six meters higher than the newly added 17.7 acres below it (Figure 3). The second change in elevation occurs in the eastern portion of the Project area immediately east of the Bedford Canyon Wash where an approximately 15-meter cliff (Figure 1) exists between the wash and another flat, disturbed area of land formally utilized for agriculture above it.

Ground visibility was poor and averaged 70% over the entire Project due to thick vegetation cover. Plant species within the Project include invasive grasses and weeds, although some Jimson weed (*Datura stramonium*) was observed. Observable ground surface was limited to the previously graded are to the west (previously approved AHSP), the access roads throughout the Project area (Figure 4), and within and adjacent to the Bedford Canyon Wash.

Disturbances include agricultural plowing, grading, erosion, modern ground disturbance, and a scatter of modern construction refuse. As previously stated, the western portion of the Project area was previously graded as part of the previously approved AHSP (Figure 5). An area was recently disturbed immediately west of the Bedford Canyon Wash and north (below) the six-meter terrace within the additional 17.7 acres added to the AHSP an isolated trifacial mano/shaping stone was observed (Figure 6).

Isolated Artifact

In the eastern end of the Project area an isolated trifacial granite mano/shaping tool was observed in the recently disturbed area west of the Bedford Canyon Wash (452143.59 m_E, 3742149.12 m_N). The mano/shaping stone is triangular in shape due to its three grinding surfaces, tapering slightly at one end. Two of the grinding surfaces are concave, while one grinding surface is convex. These grinding surfaces are atypical of more common manos, or hand-held grinding stones indicating it may have been utilized for primarily shaping versus grinding. The artifact measures 16 cm long, 8.5 cm wide, and 6.5cm wide at its tapered end. No other cultural resources were observed.



Figure 1. Close up of Bedford Canyon Wash sediments



Figure 2. Overview of cliff immediately east of Bedford Canyon Wash, view east



Figure 3. Northwest area of the Project, view east (note elevation change)



Figure 4. Center of project area, on access road, view south



Figure 5. East end of Project, plowed area, view west



Figure 6. Close up of mano observed.

IMPACTS ANALYSIS AND RECOMMENDATIONS

This section addresses the Project's potential to impact cultural and paleontological resources. If changes are made to the Project or if the level of planned disturbance changes, the recommendations herein may be subject to change.

Paleontological Resources

Our research indicates that there is a high sensitivity for paleontological resources in the Project area, as a result of the age of the deposits and nearby fossil localities in similar geological units. Ground disturbance past 10 feet b.g.s. in the eastern portion of the Project area has the potential to impact high-sensitivity Pleistocene deposits of young alluvial fan deposits (*Qaf*), and ground disturbance at the surface in APN 279-240-019 south of the basin will impact high-sensitivity old alluvial fan deposits (*Qof*). Paleontological monitoring is recommended for any ground disturbance in APN 279-240-019 south of the Bedford Canyon Wash and for ground disturbance deeper than 10 feet b.g.s. throughout the Project area west of the Bedford Canyon Wash.

A paleontological monitor shall be present to observe ground disturbing activities within the project. The monitor shall work under the direct supervision of a qualified paleontologist (B.S. /B.A. in geology, or related discipline with an emphasis in paleontology and demonstrated experience and competence in paleontological research, fieldwork, reporting, and curation).

1. The qualified paleontologist shall be on-site at the pre-construction meeting to discuss monitoring protocols.
2. Paleontological monitoring shall start at full-time. If no paleontological resources are discovered after half of the ground disturbance has occurred, monitoring can be reduced to part-time or spot-checking.
3. The monitor shall be empowered to temporarily halt or redirect grading efforts if paleontological resources are discovered.
4. In the event of a paleontological discovery the monitor shall flag the area and notify the construction crew immediately. No further disturbance in the flagged area shall occur until the qualified paleontologist has cleared the area.
5. In consultation with the qualified paleontologist the monitor shall quickly assess the nature and significance of the find. If the specimen is not significant it shall be quickly removed and the area cleared.
6. If the discovery is significant the qualified paleontologist shall notify the applicant immediately.
7. In consultation with the applicant, the qualified paleontologist shall develop a plan of mitigation which will likely include salvage excavation and removal of the find, removal of sediment from around the specimen (in the laboratory), research to identify and categorize the find, curation of the find in a local qualified repository, and preparation of a report summarizing the find.

Cultural Resources

Impacts to cultural resources are generally considered to be direct (e.g. destruction or demolition of a resource) or indirect (e.g. visual, audible, or cumulative changes to the setting). Under CEQA cultural resources are evaluated for significance and eligibility for the California Register. If a resource is considered eligible for the California Register it is considered a historical resource under CEQA. For the purposes of CEQA, impacts are only considered significant for historical resources.

DUKE CRM conducted a records search, field survey, and supplemental research for archaeological and historical resources. The results of the records search indicate there are no previously recorded cultural resources within, or near, the Project boundary. One isolated, granite mano was observed within the Project area west of the Bedford Canyon Wash. This isolated artifact is consistent with six prehistoric artifacts observed during archaeological monitoring for the 2018 Arantine Hills Project (Toney et al. 2018). Although there is a high energy deposition of Bedford Canyon Wash and the area is highly disturbed due to decades of agricultural activities, the results of the pedestrian survey coupled with the presence of artifacts observed during the 2018 construction indicates that there is a moderate probability to observe additional cultural

resources during ground disturbing activities. Therefore, DUKE CRM recommends that ground disturbance may have the potential to impact prehistoric and historic archaeological resources. Due to the moderate potential to impact cultural resources, DUKE CRM recommends archaeological monitoring during ground disturbances related to the Project, specifically during grading activities within the eastern portion of the Project area.

If archaeological and/or paleontological resources are discovered during construction, a qualified archaeologist and/or paleontologist shall be retained to assess the nature and significance of the discovery. If human remains are encountered, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a Most Likely Descendant (MLD). With the permission of the landowner or his/her authorized representative, the MLD may inspect the site of the discovery. The MLD shall complete the inspection within 48 hours of notification by the NAHC. The MLD may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials. In addition, according to the California Health and Safety Code, six or more human burials at one location constitute a cemetery (Section 8100), and unauthorized disturbance of Native American cemeteries is a felony (Section 7052).

If the proposed Project changes additional efforts may be necessary.

REFERENCES

Bean, Lowell J., and Harry W. Lawton
1993 Some Explanations for the Rise of Cultural Complexity in Native California with Comments on Proto-Agriculture and Agriculture. In *Before the Wilderness: Environmental Management by Native Californians*, edited by Thomas C. Blackburn and Kat Anderson, pp. 27-55. Ballena Press, Menlo Park.

Bean, Lowell J. and Florence C. Shipek
1978 Luiseño. In *California*, edited by Robert F. Heizer, pp.550-563. Handbook of North American Indians, Vol. 8, William C Sturtevant, general editor, Smithsonian Institution, Washington, DC.

Bean, Lowell J. and Katherine S. Saubel
1972 *Temalpakh (from the Earth): Cahuilla Indian Knowledge and Usage of Plants*. Malki Museum Press, Banning.

Bean, Lowell J. and Charles R. Smith
1978 Gabrielino. In *California*, edited by Robert F. Heizer, pp.538-549. Handbook of North American Indians, Vol. 8, William C Sturtevant, general editor, Smithsonian Institution, Washington, DC.

Brown, Alan K.
2001 A Description of Distant Roads. Original Journals of the First Expedition into California, 1769-1770.

Byrd, Brian F. and L. Mark Raab
2007 Prehistory of the Southern Bight: Models for a New Millenium. In *California Prehistory: Colonization, Culture, and Complexity*, edited by Terry L. Jones and Kathryn A. Klar, pp. 215-227. AltaMira Press, New York.

City of Corona
2018 "History of Corona" Electronic document, https://www.coronaca.gov/government/departments-divisions/library-recreation-services/library/heritage-room/history-of-corona accessed April, 2018.

Cramer, Esther Ridgway
1988 European Discovery. In *A Hundred Years of Yesterdays*, edited by Esther Cramer, et al. Orange County Centennial, Inc., Santa Ana.

Duke, C. and B. Scherzer
2018 *Cultural and Paleontological Resources Assessment, Arantine Hills Specific Plan Amendment No. 2 City of Corona, Riverside County, California.* On File at DUKE CRM, Irvine, California

Duke, C.
2010 *Cultural Resources Assessment, Arantine Hills Specific Plan, City of Corona, Riverside County, California.* LSA. Submitted to the City of Corona. Copies available from Eastern Information Center.

Engstrand, Iris H. W. and Mary F. Ward
1995 Rancho Guajome: An Architectural Legacy Preserved. Electronic document, http://www.sandiegohistory.org/journal/1995/october/archlegacy/, accessed May 18, 2017.

Gray, C.H., Jr.
1961 Geology of the Corona South quadrangle and the Santa Ana narrows area: Riverside, Orange, and San Bernardino Counties, California; and Mines and mineral deposits of the Corona South quadrangle, Riverside and Orange Counties, California: Bulletin 178, California Division of Mines, San Francisco, 120 pp.

Hillhouse, J.W.
2010 Clockwise rotation and implications for northward drift of the western Transverse Ranges from paleomagnetism of the Piuma Member, Sespe Formation, near Malibu, California: Geochemistry, Geophysics, Geosystems, v. 11, no. 7, p. 1–27.

Hooper, Lucile.
1920 The Cahuilla Indians. *University of California Publications in American Archaeology and Ethnology* 16:315-380.

Hudson, D.T.
1971 Proto-Gabrielino Patterns of Territorial Organizations in South Coastal California. *Pacific Coast Archaeological Society Quarterly* 7(2): 49-76.

Ide, Simeon
1967 *The Conquest of California by the Bear Flag Party A Biographical Sketch of the Life of William B. Ide*. Reprinted Rio Grande Press, Glorieta. Originally published 1880, publisher and place unknown.

Jefferson, G.T.
1991a *A catalogue of Late Quaternary Vertebrates from California: Part one, Non-marine Lower Vertebrate and Avian Taxa*: Technical Report #5. Natural History Museum of Los Angeles, Los Angeles.

1991b *A Catalogue of late Quaternary Vertebrates from California: Part two, Mammals*. Technical Report #7. Natural History Museum of Los Angeles, Los Angeles.

Jones, Terry L., Gary M. Brown, L. Mark Raab, Janet L. McVickar, W. Geoffrey Spaulding, Douglas M. Kennett, Andrew York, and Phillip L. Walker
2004 Environmental Imperatives Reconsidered: Demographic Crises in Western North America During the Medieval Climatic Anomaly. In *Prehistoric California: Archaeology and the Myth of Paradise*, edited by L. Mark Raab and Terry L. Jones, pp. 12-32. University of Utah Press, Salt Lake City.

Koerper, H. C., and C. E. Drover
1983 Chronology Building for Coastal Orange County: The Case from CA-ORA-119A. *Pacific Coast Archaeological Society Quarterly* 19(2):1–34.

LGC Geotechnical, Inc.
2018 Preliminary Geotechnical Evaluation for Proposed Lower McMillan parcel, Arantine Hills Residential Development, Parcels 1 and 2 of parcel map no. 37036, City of Corona, California, submitted to The New Home Company, April 3.

McDonald, A.
2018 Records Search for McMillan Project, City of Corona, County of Riverside, California: prepared for DUKE CRM, February 21.

McKenna et al.
2003 A Phase I Cultural Resources Investigation Of 500 Acres in the Bedford Canyon Area Near the City of Corona of Riverside County, California: prepared for Bluestone Communities, July 31.

Moratto, Michael J.
1984 *California Archaeology*. Academic Press, Inc., Orlando.

Morton, D.M., and Miller, F.K.
2006 Geologic map of the San Bernardino and Santa Ana 30' x 60' quadrangles, California: U.S. Geological Survey, Open-File Report OF-2006-1217, scale 1:100,000.

Nationwide Environmental Title Research, LLC (NETR)
2018 Historic and modern aerial photographs (1948, 1966, 1995, and 2002). Electronic document, http://historicaerials.com/viewer accessed April, 2018.

Oxendine, Joan
1983 Luiseño Village During the Late Prehistoric Era. PhD. Dissertation, Department of Anthropology, University of California, Riverside.

Radford, D.
2019 Records Search for the Bedford Marketplace Project, City of Corona: Prepared for DUKE CRM, July 11.

Rieboldt, Sarah
2015 Paleontological Resources Impact Mitigation Program for the Arantine Hills Specific Plan Project, City of Corona, Riverside County, California. Prepared for The New Home Company September 2015. LSA Project No. NHC1405.

Rieboldt, Sarah
2018 Results of Palentological Mitigation Monitoring for the Arantine Hills Specific Plan Project, Corona, Riverside County, California. On File at DUKE CRM, Irvine, California.

Rolle, Andrew
2003 *California A History* (sixth edition). Harlan Davidson, Wheeling.

Sutton, Mark Q.
2009 People and Language: Defining the Takic Expansion into Southern California. *PCAS Quarterly*, 41(2, 3) 31-93

Todd, V.R., Shaw, S.E., and J.M. Hammarstrom
2003 Cretaceous Plutons of the Peninsular Ranges Batholith, San Diego and Westernmost Imperial Counties, California: Intrustion Across a Late Jurassic Continental Margin, in Johnson, S.E., Paterson, S.R., Fletcher, J.M., Girty, G.H., Kimbrough, D.L., and A. Martin-Barajas, eds., Tectonic Evolution of Northwestern Meixico and the Southwestern USA, Geological Society of America Special Papers 374, p. 185-235, doi:10.1130/0-8137-2374-4.815.

Tonley, Joushua, Ivan Strudwick, and Sandy Duarte
2018 Phase IV Archaeological Monitoring for the Arantine Hills Project, City of Corona, Riverside County, California. On file at DUKE CRM.

U.S. Department of the Interior, U.S. Geologic Survey
2018 Historic and modern topographic maps (1947-present). Electronic document, https://ngmdb.usgs.gov/topoview/ accessed April, 2018.

Vellanoweth, Rene L. and Donn R. Grenda
2002 Paradise or Purgatory: Environments, Past and Present. In *Islanders and Mainlanders: Prehistoric Context for the Southern California Bight*, edited by Jeffrey H. Altchul and Donn R. Grenda, pp. 67-84. SRI Press, Tucson.

Wallace, William
1955 A Suggested Chronology for Southern California Coastal Archaeology. *Southwestern Journal of Anthropology* 2:214-230.

Warren, Claude N.
1980 The Desert Region. In *California Archaeology*, edited by Michael J. Moratto, pp. 339-428. Academic Press, Inc. Salinas.

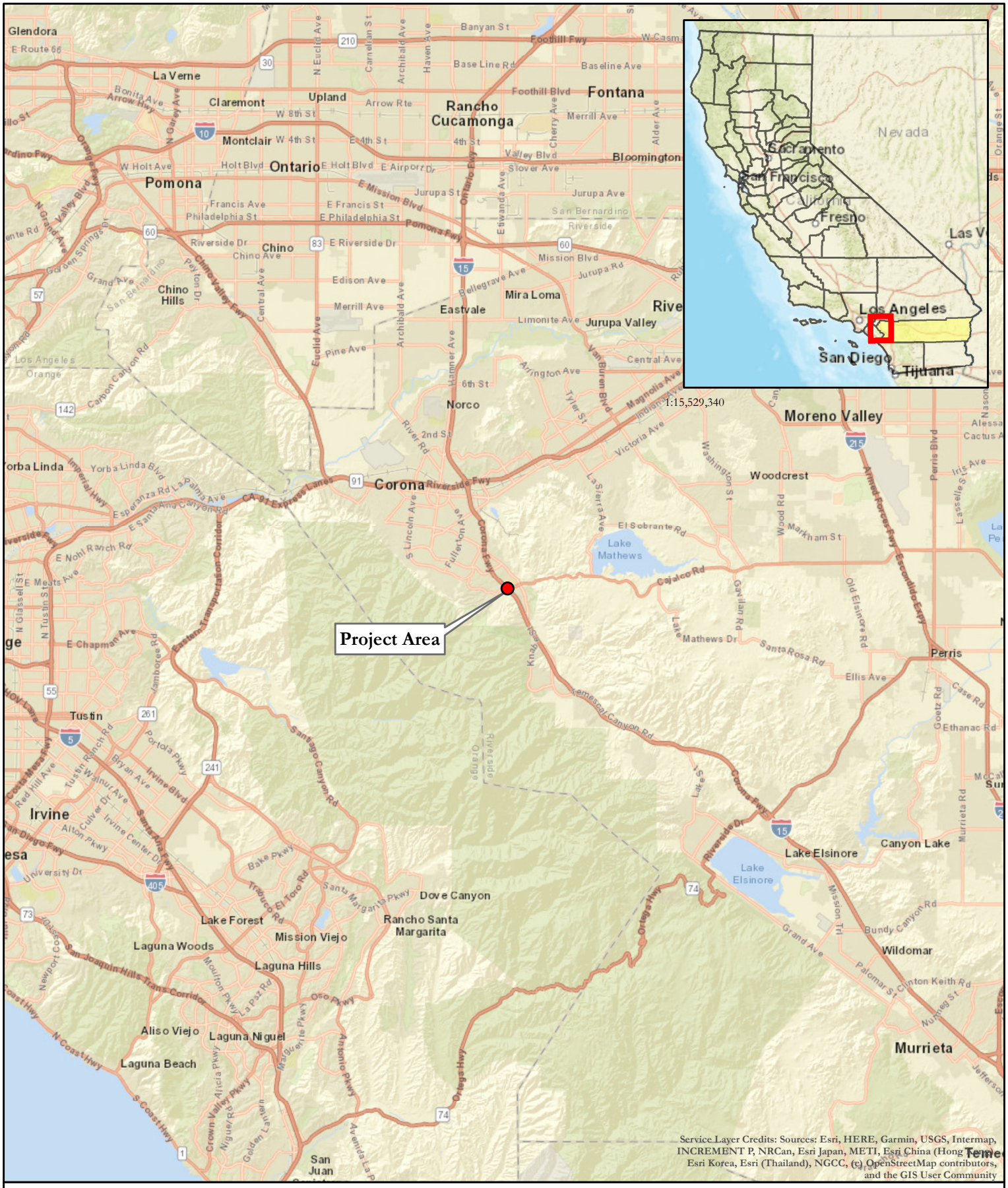
Warren, Claude N. and Robert H. Crabtree
1986 Prehistory of the Southwestern Area. In *Great Basin*, edited by Warren L. D'Azevedo, pp. 183-193. Handbook of North American Indians, Vol. 11, William C. Sturtevant, general editor, Smithsonian Institution, Washington, DC.

White, Raymond C.
1963 Luiseño Social Organization. *University of California Publications in American Archaeology and Ethnology* 48:91–194.

Yerkes, R.F., and R.H. Campbell
2005 Preliminary geologic map of the Los Angeles 30' x 60' Quadrangle, southern California: United States Geological Survey Open-File Report 2005–1019, Version 1.0.

APPENDIX A

PROJECT MAPS



Map 1- Project Vicinity

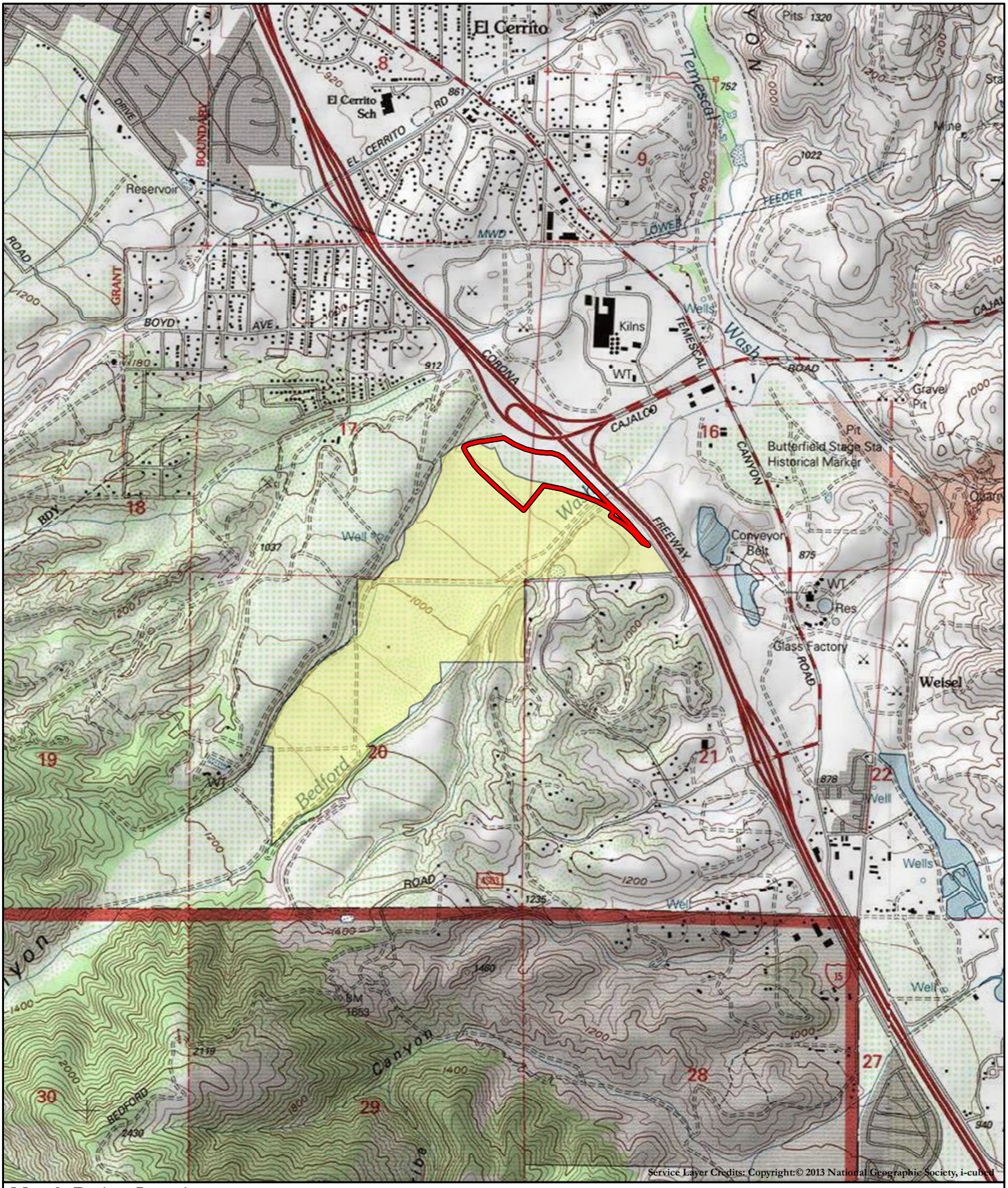
Bedford Canyon Marketplace,
City of Corona, Riverside County, CA

DUKE CRM

0 5 10 Miles

1 inch = 5 miles 1:316,800

N



Map 2- Project Location

Bedford Canyon Marketplace,
City of Corona, Riverside County, CA

DUKE CRM

Project Area

Arantine Hills Specific Plan

0 0.25 0.5 Miles

0 0.25 0.5 Kilometers

N

1 inch = 2,000 feet 1:24,000

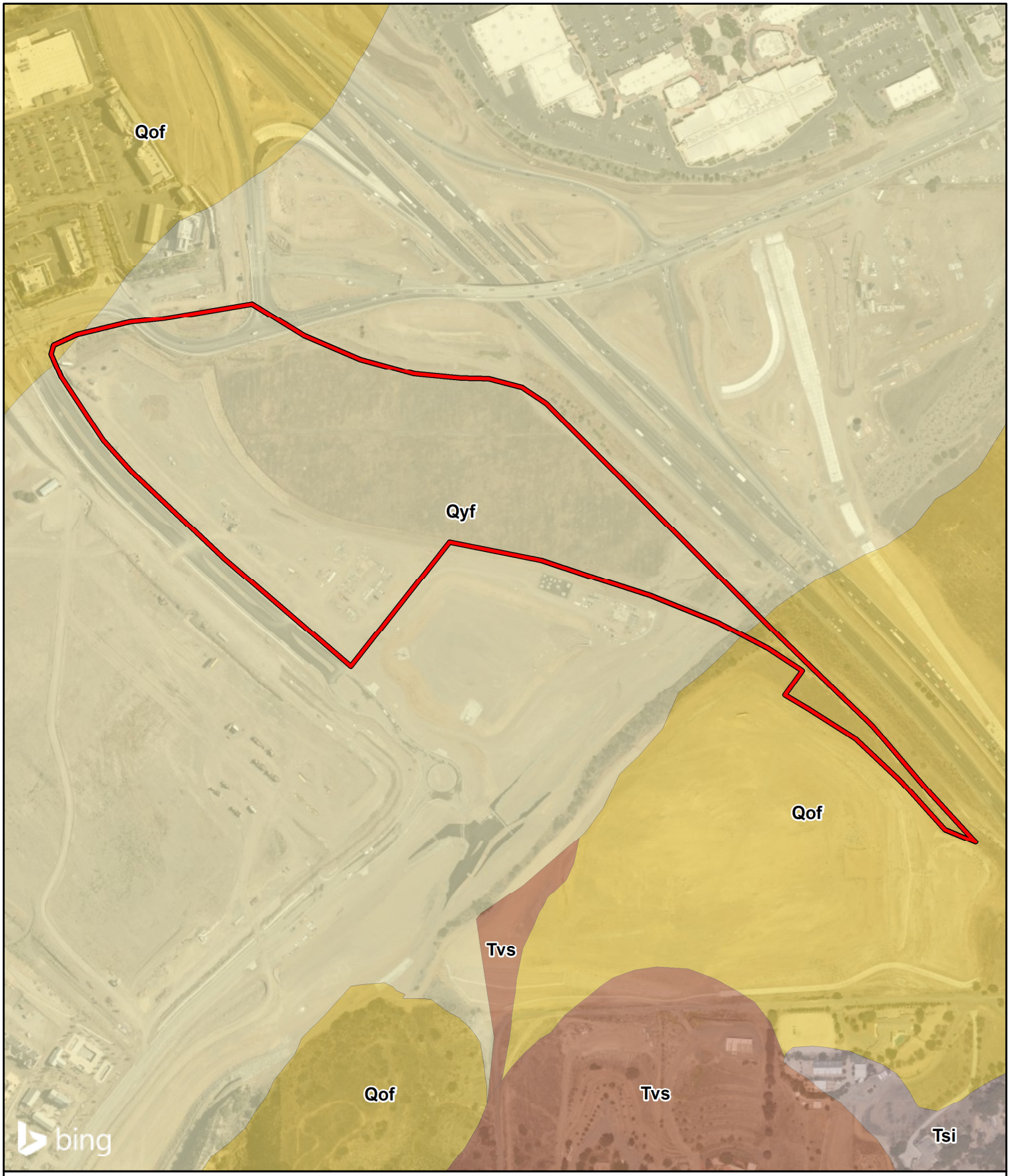


Map 3- Project Aerial
Bedford Canyon Marketplace,
City of Corona, Riverside County, CA

DUKE CRM

Project Area
Arantine Hills Specific Plan

0 200 400 Feet
N
1 inch =400 feet
1:4,800



Map 4- Project Geology

Bedford Canyon Marketplace,
City of Corona, Riverside County, CA

DUKE CRM

Geology from Morton and Miller 2006

- Qyf: young alluvial-fan deposits
- Qof: old alluvial fan deposits
- Tvs: Silverado Formation
- Tsi: Silverado Formation
- Project Area

0 200 400 Feet

N

1 inch = 400 feet 1:4,800

APPENDIX B

RESUMES

DUKE CRM

18 Technology Dr., Ste. 103
Irvine, CA 92618
949-356-6660
www.dukecrm.com

Curt Duke

President/Principal Archaeologist



Expertise

Cultural Resources Management
California Prehistory
Section 106 Compliance
CEQA Compliance
Native American Consultation

Education

CSU, Fullerton, M.A., Anth, 2006
SDSU, Grad Studies, Anth, 1996-97
UC Santa Cruz, B.A., Anth, 1994

Professional Registrations

RPA, No. 15969
County of Riverside (No. 151)
County of Orange

Professional Memberships

Society for California Archaeology
Society for American Archaeology
Pacific Coast Archaeological Society
Assoc. of Environmental Professionals
Building Industry Association

Professional Experience

President/Principal Archaeologist, DUKE CRM, March 2011 to present
Archaeologist/Principal, LSA Associates, 1997-2011
Archaeological/Paleontological Technician, Various Companies, 1995-97
Archaeological Technician/Teachers Assistant, Cabrillo College, 1994
Anthropological Laboratory Technician, UC Santa Cruz, 1994

Selected Project Experience

Sweeny Road, Lompoc, 2018
Vantage Point Church, Eastvale, 2016 and 2018
Murrieta's Hospitality Commons, Murrieta, 2017-Present
VA West Los Angeles Campus Master Plan, 2017-Present
Avenue S-8 and 40th St. E. Roundabout, Palmdale, 2017-18
SR-110 Improvements, Los Angeles, 2017
Diamond Valley Estates Specific Plan, Hemet, 2017
VA West Los Angeles Campus Hospital Replacement, 2016-Present
Shoemaker Bridge Replacement, Long Beach, 2016-Present
Spruce Goose Hangar, Playa Vista, 2016
Rice Avenue at 5th Street Grade Separation, Oxnard, 2015-Present
Vila Borba, Chino Hills, 2013-Present
Skyridge Residential, Mission Viejo, 2011-Present
Baker Water Treatment Plant, Lake Forest, 2014-2015
VA Clinic, Loma Linda, 2014-Present
Evanston Inn, Pasadena, 2014-2016
Petersen Ranch, Leona Valley, 2013-2014
California Street/Highway 101, Ventura, 2014-Present
6th Street Bridge Replacement, Los Angeles, 2013-Present
I-15/I-215 IC Project, Devore, 2008-10
Colton Crossing Rail-to-Rail Grade Separation, 2008-11
City of LA DPW BOE, On-Call, Cultural/Paleo Services, 2008-11
Mid County Parkway, Riverside County, 2014-10
McSweeny Farms Specific Plan, Hemet, 2004-08
Mesquite Regional Landfill, Coachella Valley, 2006-08
Hacienda at Fairview Valley Specific Plan, Apple Valley2007-08
Majestic Hills Specific Plan, Hesperia, 2006-07
Chuckwalla Solar I Project, Desert Center, 2007-08
Needles Highway Improvement Project, 2004-06
Superstition Solar I Project, Salton Sea, Imperial County, 2008
Muddy Canyon Archaeological Project, Newport Beach, 1997-2001
Temecula 32, Archaeological Phase II Testing, 2007
Mammoth Lakes Parks/Rec and Trail System Master Plan, 2010
24th Street Improvements, City of Bakersfield, 2008-11
California Valley Solar Ranch, San Luis Obispo County, 2009-10
Delano-Alpaugh Water Pipeline, Kern/Tulare Counties, 2006-09
I-15/SR-79 IC Project, Temecula, 2006-10
Westlake Historic Resources Survey, Los Angeles, 2008-09
CETAP, western Riverside County, 1999-2001
Los Coches Creek Elementary School, near Alpine, 2003-06
Oak Valley Specific Plan 1 Amendment, Beaumont, 2004
Fort Irwin, National Training Center, 1999
San Nicolas Island, Naval Base Ventura County, CA, 1997
Cell Sites, ~3,000 projects in CA and in NV, AZ, IL, WI, 1997-2018

DUKE CRM

18 Technology Dr., Ste. 103
Irvine, CA 92618
949-356-6660
www.dukecrm.com

Megan Patricia Wilson

Archaeologist/GIS Analyst



Expertise

Cultural Resources Management
California Archaeology and History
Geographical Information Systems
Trimble, Pathfinder, TerraSync, GPS Software
Section106, NEPA, and CEQA Compliance
Native American Consultation

Education

CSU, Fullerton, M.A., Anthropology, 2014
UCLA B.A., Anthropology, 2006

Professional Registrations

RPA, No. 30984245

Certifications

GIS Certification, CSU, Fullerton, 2013

Professional Memberships

Society for California Archaeology
Society for American Archaeology
Society for Historical Archaeology
Orange County Historical Society

Professional Experience

Archaeologist and GIS Analyst, Duke CRM, 2019-Present
Archaeologist and GIS Manager, Cogstone RMI, 2014-2019
Assistant Archaeology Curator, John D. Cooper Center, 2012-2014
Lab Assistant, California State University, Fullerton Archaeology Lab, 2011-2012
Archaeological Field Technician, The Keith Companies, 2003

Selected Project Experience

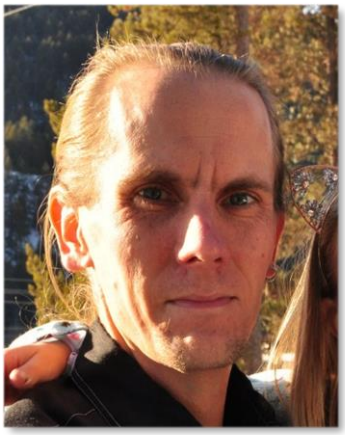
Purple Line Extension (Westside Subway), Metro/FTA, Los Angeles, 2019
Brea 265 Specific Plan, City of Brea, 2019
Ontario International Airport Evaluation, City of Ontario, 2019
Irvine General Plan, Update, 2019
River Street Marketplace, City of San Juan Capistrano, 2019
Lake Forest General Plan Update, City of Lake Forest, 2018
I-5/Venta Spur Trail Bicycle and Pedestrian Bridge, City of Irvine, 2018
Newport Crossing Development, Newport Beach, 2018
La Verne General Plan Update, City of Laverne, 2018
I-605 Katella Interchange Improvements Project, 2018
Chino High School, City of Chino, 2018
SR 57 Widening Project-Orangewood to Katella, Caltrans District 12, 2018
Harriet M. Weidner Regional Park, City of Huntington Beach, 2017
Park Place Extension and Grade Separation EIR EA, Caltrans District 7, El Segundo, , 2017
Accelerated Charter Elementary School, Los Angeles Unified School District, Los Angeles, 2017
Del Sur Solar EIR, Lancaster, 2016
Little Corona Infiltration/Buck Gully, Newport Coast Watershed Management Plan, Newport Beach, 2016
Longboat Solar Photovoltaic, EDF Renewable Energy, Barstow and Lenwood, 2016
I-5 Jeffrey Open Space Trail (JOST) Segments 1 & 2, Irvine, City of Irvine/Caltrans District 12, 2015
Sweany Pipeline, Phase II, Laguna Beach County Water District, Crystal Cove State Park, 2014
Little Tujunga Canyon Road Project, Angeles National Forest, 2015
Greenville-Banning Channel Rehabilitation, OC Public Works, Costa Mesa, 2014
Lopez and Agua Dulce Canyons Restoration Due Diligence, Mountains Recreation and Conservation Authority, Angeles National Forest, 2014

DUKE CRM

18 Technology Dr., Ste. 103
Irvine, CA 92618
949-356-6660
www.dukecrm.com

Benjamin Scherzer

Paleontologist



Expertise

Paleontological Resources Management
Fossil excavation
Fossil preparation
Stratigraphy
Natural gas mudlogging
Directional drilling

Education

M.S., Earth Science, 2008, MSU, Bozeman, MT
B.A., Geology/Math, 2002, Earlham College, IN

Professional Registrations

Paleontologist, County of Orange
Paleontologist, County of Riverside

Professional Memberships

Society of Vertebrate Paleontology
Geological Society of America
Society for Sedimentary Geology
American Association of Petroleum Geologists, Pacific Section
South Coast Geological Society
Western Association of Vertebrate Paleontologists

Publications and Professional Papers

Scherzer, B. 2017. A possible physeteroid (cetacea: odontoceti) from the Yorba member of the Puente Formation, Orange County, California.

Scherzer, B. 2016. An archaic baleen whale (Cetacea: Mysticeti) from the Vaqueros Formation, and other fossil material from the Skyridge Project, Orange County, California.

Scherzer, B. 2015. Miocene teleost fish from Chino Hills: preliminary results from the Vila Borba Project, San Bernardino County, California.

Professional Experience

Paleontologist, DUKE CRM, February 2014-present
Paleontologist, L&L Environmental, 2017-2018
Stratigrapher, Archeological Resource Management Corp., 2015-2018
Paleontological Specialist II, SD Natural History Museum, 2013-2018
Paleontological Specialist II, SWCA (Pasadena), 2012-2015
Paleontologist, SWCA (Vernal, UT), 2011-2012
Fossil Preparator, Carter County Museum, 2010-2011
Physical Science Technician, Badlands National Park, 2010
Mudlogger/Geologist, Pason Systems USA, 2006-2009
Paleontological Field Assistant, ARCADIS US, 2006-2007

Selected Project Experience

Prairie Avenue Bridge Rehabilitation, Torrance, 2019-present
San Jacinto GP & Update, San Jacinto, 2019-present
I-5 Widening, Aliso Viejo, 2018-present
Sweeny Rd, Lompoc, 2018-present
Atlanta Avenue Widening, Huntington Beach, 2018-present
Ocean Place, Seal Beach, 2018-present
Lake Forest Civic Center, Lake Forest, 2018-present
Vanderham Monitoring, Jurupa Valley, 2017-2018
Ave S-8 and 40th St Roundabout, Palmdale, 2017-present
Gold Flora Farms, Desert Hot Springs, 2017-present
I-5 HOV Truck Lanes, Santa Clarita, 2017-2018
Brasada Homes, San Dimas, 2017-2018
Indus Light Industrial Building, Chino Hills, 2017-2018
Murrieta's Hospitality Commons, Murrieta, 2017
6th Street Viaduct, Los Angeles, 2017-present
I-15 TEL, Riverside and San Bernardino Counties, 2017
Lewis Street, Anaheim, 2017
The Crossings, Chino Hills, 2016-2017
Reata Glen, Mission Viejo, 2016-2018
Greenville-Banning Channel, Costa Mesa, 2016
Fairfield Ranch, Chino Hills, 2016
Diamond Valley, Hemet, 2017
Marywood Residential, Orange, 2016-2017
Rancho Mission Viejo, Mission Viejo, 2015-2018
Santa Margarita Water District Tesoro Reservoirs, Mission Viejo, 2015
Evanston Inn, Pasadena, 2015
Village of Terrassa, Corona, 2015
Sycamore to Peñasquitos 230 kV Transmission Line, San Diego, 2015
Lakeside Temescal Valley, Temescal Valley, 2015-present
Vila Borba, Chino Hills, CA, 2013-present
RP-Outfall Relocation, Ontario, 2014
Serrano Ridge, Temescal Valley, 2014
Lago Los Serranos, Chino Hills, 2014
Baker WTP, Lake Forest, 2014
Skyridge Residential, Mission Viejo, 2014-present
Pacific Highlands, San Diego, 2014
Sol y Mar, Ranchos Palos Verdes, 2013-2014
Mojave Solar Power, Hinkley, 2013
Genesis Solar Energy, Blythe, 2012-13

APPENDIX C

CONFIDENTIAL DPR FORM

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: C-0300-ISO-001

P1. Other Identifier: C-0300-ISO-001

***P2. Location:** ☒ Not for Publication □ Unrestricted

***a. County:** Riverside

***b. USGS 7.5′ Quad:** Corona South **Date:** 1967 **T** 4 S**; R** 6 W**;** NW ¼ **of** SW ¼ **of Sec;** San Bernardino **B.M.**

c. Address: Southwest of Interstate 15 and Calajco Road intersection **City** Corona **Zip** 92881

d. Zone 11N: 452144. **mE/** 3742149 **mN** NAD 83

e. Other Locational Data: APN 279-240-019, approximately 80 meters west of Bedford Creek

***P3a. Description** This artifact consists of one isolated trifacial granite mano. The mano was observed in the recently disturbed area 80 meters west of the Bedford Canyon Wash. The Bedford Canyon is a dry wash formally utilized for agriculture, specifically a citrus orchard. The location of the artifact was located in a recently plowed area; the surrounding area was covered in dense invasive weeds. The mano is triangular in shape due to its three grinding surfaces, tapering slightly at one end. Two of the grinding surfaces are slightly concave, while one is convex, which indicates is may have been used more as a shaping tool than a mano to grind against a metate or bedrock mortar. It measures 16 cm long, 8.5 cm wide, and 6.5cm wide at its tapered end.

***P3b. Resource Attributes:** AH 16, other-prehistoric isolate

***P4. Resources Present:** □ Building □ Structure □ Object □ Site □ District □ Element of District ☒ Other: Prehistoric Isolate-trifacial mano/shaping tool

P5a Photograph or Drawing



P5b. Description of Photo: Plane view of trifacial mano, in field

***P6. Date Constructed/Age and Source:** ☒ Prehistoric □ Historic □ Both

***P7. Owner and Address:**
Riverside County Transportation Commission (RCTC)
P.O. Box 12008
Riverside CA, 92502

***P8. Recorded by** Megan Wilson, M.A., R.P.A DUKE CRM, 18 Technology Drive, Irvine, CA 92618

***P9. Date Recorded:** 07/03/2019

***P10. Type of Survey:** ☒ Intensive □ Reconnaissance □ Other
Describe:

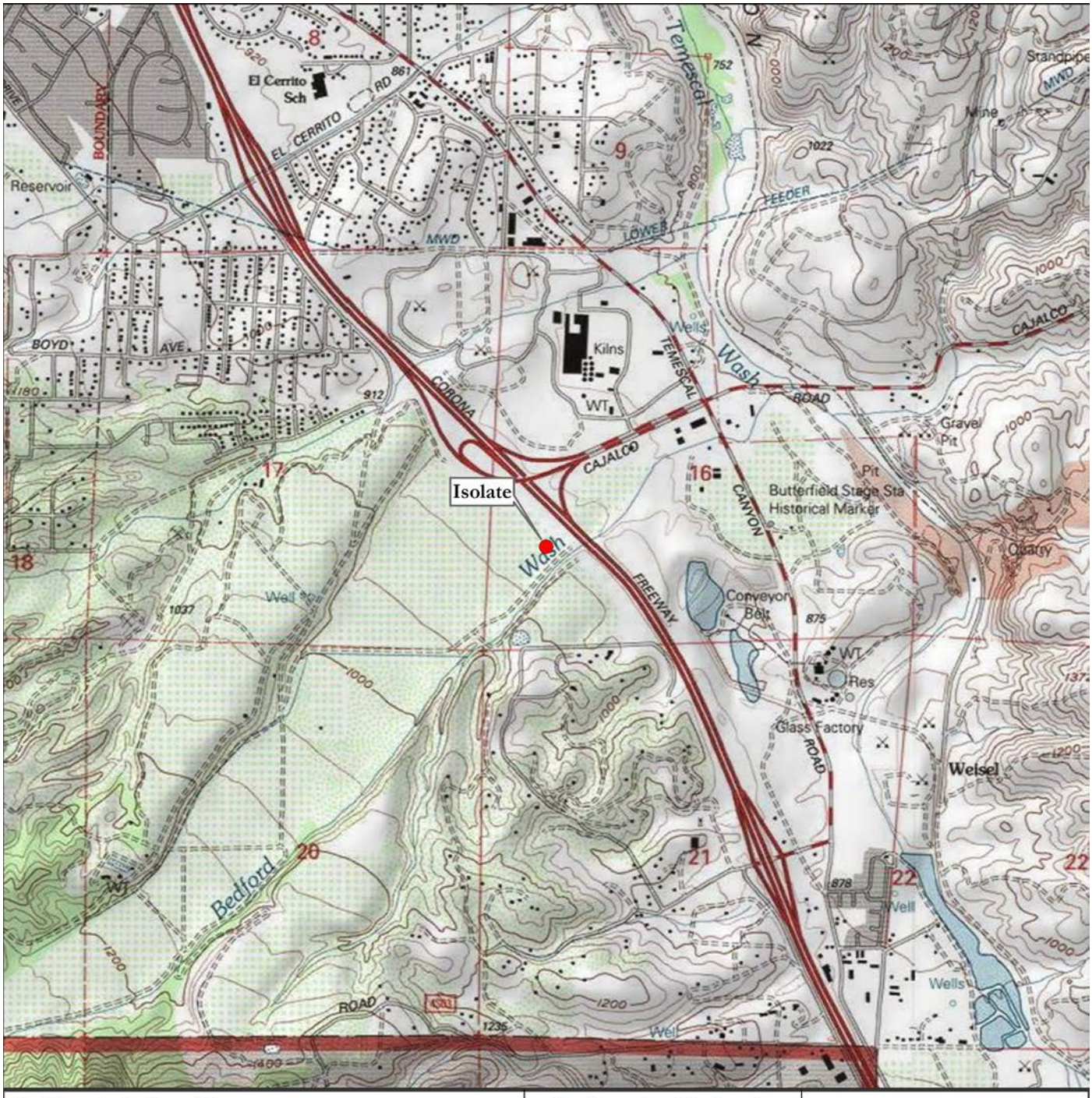
***P11. Report Citation**: Duke, C. and M. Wilson
Cultural and Paleontological Resources Assessment, Bedford Canyon Marketplace, City of Corona, Riverside County, California

***Attachments:** □ None ☒ Location Map □ Site Map □ Continuation Sheet □ Building, Structure, and Object Record □ Archaeological Record □ District Record □ Linear Feature Record □ Milling Station Record □ Rock Art Record □ Artifact Record □ Photograph Record Other:

State of California -- The Resources Agency	Primary #
DEPARTMENT OF PARKS AND RECREATION	HRI#
LOCATION MAP	Trinomial

Page 2 **of** 2 ***Resource Name or #:** C-0300-ISO-001

***Map Name:** Corona South ***Scale:** 1:24,000 ***Date of Map:** 1967



Prehistoric Isolate:Mano

Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed *This data represents an extension of the federal PLSS prepared by the California Department of Pesticide Regulation. Gaps and irregularities caused by civil land grants have been mathematically filled without the benefit of field surveys. Townships, ranges, and sections are an extrapolation, and might not exist in the federal survey.

Site Location Depicted on the Corona South, Calif. USGS 7.5-Min. Quad.

Township 4 South, Range 6 West, Section 16

0 2,000 Feet N

0 300 Meters 1:24,000

APPENDIX D-2:

Cultural/Paleontological Resource Survey Mass Grading Plan

This Page Intentionally Left Blank

DUKE CRM

18 Technology Drive, Ste. 103
Irvine, California 92618
949-356-6660
www.dukecrm.com

November 13, 2019

Mr. Glen L. Powles
Guardian Capital
5780 Fleet Street, Suite 225
Carlsbad, CA 92008

Subject: Cultural/Paleontological Resource Survey Update for the Bedford Canyon Marketplace Project-Bedford Ranch Phase 2B Mass Grading Plan, City of Corona, County of Riverside, California

Dear Mr. Powles:

At the request of Guardian Capital, Duke Cultural Resources Management, LLC (DUKE CRM) has conducted a cultural and paleontological assessment update for the Bedford Canyon Marketplace Project-Bedford Ranch Phase 2B Mass Grading Plan Alternative, located in the City of Corona, Riverside County, California. The purpose of this letter is to address any impacts to cultural and paleontological resources for the updated Bedford Canyon Marketplace Phase 2B Mass Grading Plan Alternative.

The Bedford Ranch Phase 2B Mass Grading Plan Alternative (Project Alternative) exists entirely within the original Arantine Hills Specific Plan (AHSP) limits (Figure 1). DUKE CRM conducted a cultural and paleontological resources study for the Bedford Canyon Marketplace Project in August 2019 (Duke et al. 2019) and LSA conducted a cultural resources assessment (Duke 2010) for the original AHSP in 2010 as well conducted archaeological (Tonley et al. 2018) and paleontological monitoring (Reiboldt 2018) during ground disturbances for the AHSP.

The primary difference in the Project Alternative from the original Bedford Canyon Marketplace Project is an increase in vertical impacts to potential cultural and paleontological resources. As stated in the original Bedford Canyon Marketplace Project description (Duke et al. 2019), the majority of the Bedford Canyon Marketplace Project area (west of the Bedford Canyon wash) is at a lower elevation than the adjacent portion of the AHSP and requires the import of approximately 440,000 cubic yards of dirt. The Project Alternative proposes to export sediments and fill material from the Phase 2B Mass Grading area (depicted in blue-Figure 1), located east of the Bedford Canyon Wash (Wash), directly west across the Wash to utilize in elevating the 17.7 acres located within the Bedford Canyon Marketplace Project area (depicted in green-Figure1). Project proponents include:

1. Phase 2B area was previously graded and a new existing pad elevation established.
2. Phase 2B area was over-excavated approximately 5 to 7 feet below the current pad elevation. That dirt was removed, blended, replaced, and compacted to 90%.
3. Therefore, the area previously disturbed extends 5 to 7 feet below the existing pad grade.
4. This area was monitored for archaeology, paleontology and Native American cultural resources.
5. The Project Alternative proposes to lower Phase 2B area approximately 13 feet. This will require the over excavation of 5 to 7 feet below the new pad elevation.

6. Therefore, of the 13 feet of removal, 5 to 7 feet has already been disturbed. The remaining 6 feet of over-excavation would disturb native material.
7. Archaeological and paleontological monitoring would be required for work within native material.

The original grading for the AHSP (depicted in yellow – Figure 1) included the removal of five to seven feet of sediments. The sediments were removed, blended, replaced, and compacted. The updated Project Alternative proposes to lower Phase 2B area 13 feet and export the fill and sediments west of the Wash into the Bedford Canyon Marketplace Project area (depicted in green-Figure 1).

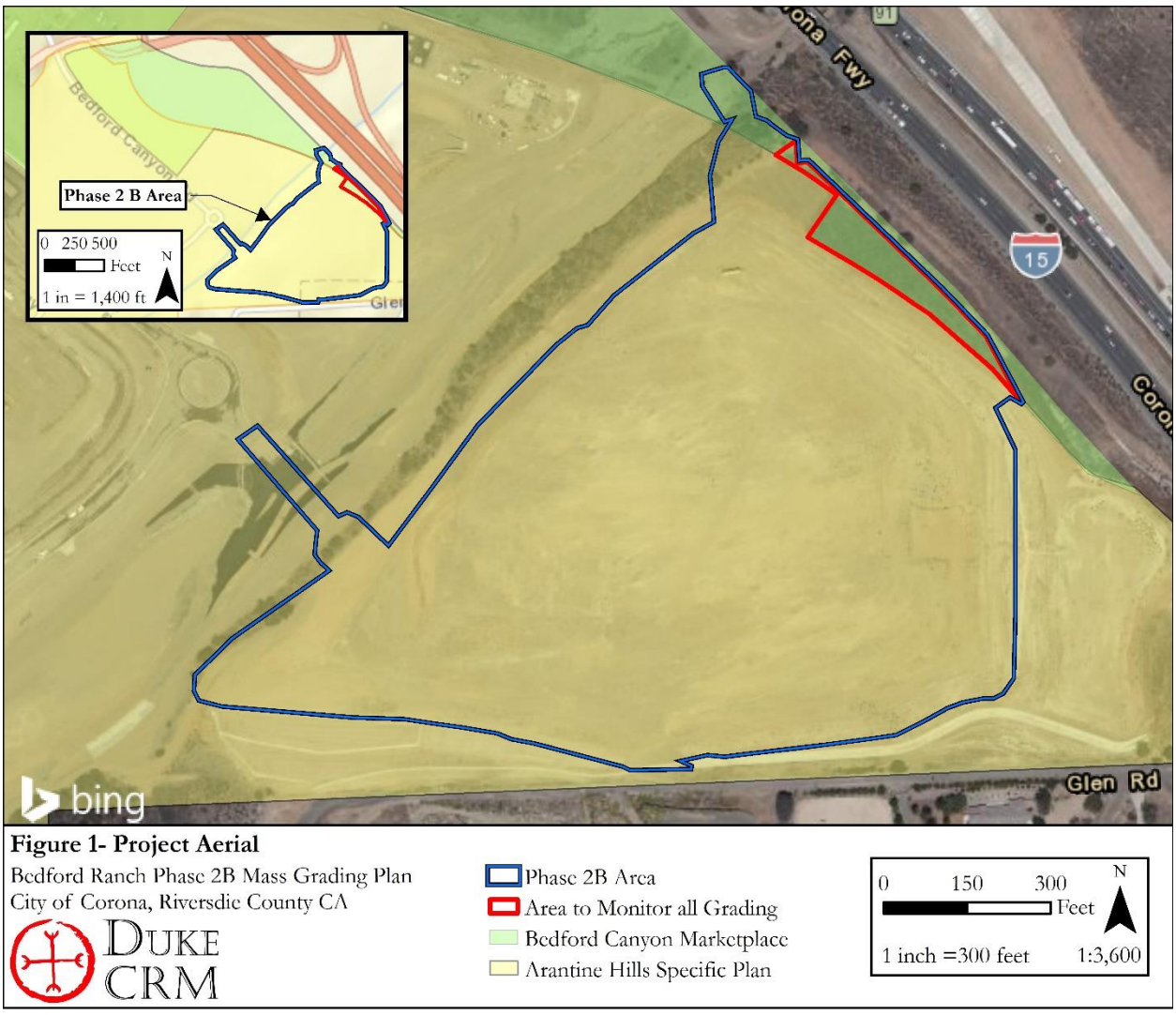


Figure1. Bedford Ranch Phase 2B Mass Grading Plan

CONCLUSION AND RECOMMENDATIONS

The majority of the Bedford Ranch Phase 2B Mass Grading Plan Alternative has been previously graded to a depth of five to seven feet. It is recommended that no archaeological or paleontological monitoring is required within the previously graded and recompacted fill area.

However, archaeological paleontological monitoring is recommended for native sediments, which is assumed to be at a depth of five-seven feet below the present ground surface in Phase 2B area as well as for all ground disturbances in the northeastern portion of the Project Alternative (depicted in red-Figure 1). Archaeological and paleontological monitoring recommendations for the Project Alternative shall be the same mitigation measures outlined in the Cultural and Paleontological Resources Assessment, Bedford Canyon Marketplace Report (Duke et al. 2019). If the proposed Project Alternative changes, additional survey efforts may be necessary.

If you have any questions or comments, you can contact me at (949) 303-0420 or by e-mail at curt@dukecrm.com.

Sincerely,

DUKE CULTURAL RESOURCES MANAGEMENT, LLC

Curt Duke, M.A., RPA
President/Principal Archaeologist

REFERENCES CITED

Duke, C., M. Wilson and B. Scherzer
2019 Cultural and Paleontological Resources Assessment, Bedford Canyon Marketplace, (Arantine Hills Specific Plan Amendment No. 3) City of Corona, Riverside County, California. On File at DUKE CRM, Irvine, California

Duke, C. and B. Scherzer
2018 Cultural and Paleontological Resources Assessment, Arantine Hills Specific Plan Amendment No. 2 City of Corona, Riverside County, California. On File at DUKE CRM, Irvine, California

Duke, C.
2010 Cultural Resources Assessment, Arantine Hills Specific Plan, City of Corona, Riverside County, California. LSA Associates. Submitted to the City of Corona. Copies available from Eastern Information Center.

Rieboldt, Sarah
2018 Results of Palentological Mitigation Monitoring for the Arantine Hills Specific Plan Project, Corona, Riverside County, California. On File at DUKE CRM, Irvine, California.

Tonley, Joshua, Ivan Strudwick, and Sandy Duarte
2018 Phase IV Archaeological Monitoring for the Arantine Hills Project, City of Corona, Riverside County, California. On file at DUKE CRM.

APPENDIX E-1:

Preliminary Geotechnical Evaluation

This Page Intentionally Left Blank

July 22, 2019 Project No. 19080-01

Mr. Glen Powles
Bedford Marketplace, LLC
5780 Fleet Street, Suite 225
Carlsbad, California 92008

Subject: ***Preliminary Geotechnical Evaluation for Proposed Bedford Marketplace, Tracts 37030, 36294, and 37644, Corona, California***

In accordance with your request, LGC Geotechnical, Inc. has prepared this preliminary geotechnical evaluation report for the proposed Bedford Marketplace, Tracts 37030, 36294, and 37644, located in the City of Corona, California. This report summarizes our findings, conclusions, and preliminary recommendations with regards to the proposed development.

If you should have any questions regarding this report, please do not hesitate to contact our office. We appreciate this opportunity to be of service.

Respectfully,

LGC Geotechnical, Inc.

PROFESSIONAL GEOLOGIST
TIMOTHY LAWSON
No. 1821
CERTIFIED ENGINEERING GEOLOGIST
EXP. 2/29/20
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY LAWSON
No. 2626
GEOTECHNICAL
STATE OF CALIFORNIA

PROFESSIONAL GEOLOGIST
KEVIN DYEKMAN
No. 2595
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

Tim Lawson, CEG 1821, GE 2626
Geotechnical Engineer

Kevin Dyekman, CEG 2595
Project Geologist

KAD/TJL/amm

Distribution: (1) Addressee (electronic copy)
(3) Hunsaker & Associates (1 electronic & 2 wet-signed copies)
Attn: Paul Huddleston

TABLE OF CONTENTS

Section ***Page***

1.0 INTRODUCTION....2
1.1 Site Description....2
1.2 Background....2
1.3 Project Description....3

2.0 GEOTECHNICAL CONDITIONS....5
2.1 Regional Geology....5
2.2 Site-Specific Geology....5
2.2.1 Artificial Fill, Undocumented (Not Mapped)....5
2.2.2 Artificial Fill (Symbol - Af)....5
2.2.3 Quaternary Alluvium Deposits (Symbol - Qal)....6
2.3 Groundwater....6
2.4 Seismic Design Criteria....6
2.5 Faulting and Seismic Hazards....7
2.5.1 Liquefaction and Dynamic Settlement....8
2.5.2 Lateral Spreading....8
2.6 Landslides....9
2.7 Expansion Potential....9
2.8 Oversized Material....9
2.9 Rippability....9

3.0 CONCLUSIONS....10

4.0 RECOMMENDATIONS....11
4.1 Site Earthwork....11
4.1.1 Site Preparation....11
4.1.2 Removal Depths....12
4.1.3 Over-Excavation....12
4.1.4 Removal Bottoms and Subgrade Preparation....13
4.1.5 Temporary Excavations....13
4.1.6 Material for Fill....14
4.1.7 Fill Placement and Compaction....14
4.1.8 Shrinkage and Bulking....15
4.1.9 Trench and Retaining Wall Backfill and Compaction....16
4.2 Slope Stability....16
4.2.1 Cut Slopes....16
4.2.2 Fill Slopes....17
4.2.3 Slope Maintenance Guidelines....17
4.3 Subdrains....18
4.4 Provisional Soil Bearing and Lateral Resistance....18
4.5 Lateral Earth Pressures for Retaining Walls....19
4.6 Fences and Freestanding Walls....20

TABLE OF CONTENTS (Cont'd)

4.7 Control of Surface Water and Drainage Control.....21
4.8 Geotechnical Plan Review.....22
4.9 Geotechnical Observation and Testing.....22

5.0 LIMITATIONS.....23

LIST OF TABLES, ILLUSTRATIONS, & APPENDICES

Tables

Table 1 – Seismic Design Parameters (Page 7)
Table 2 – Estimated Shrinkage (Page 15)
Table 3 – Lateral Earth Pressures- Select Onsite Backfill (Page 19)
Table 4 – Summary of Infiltration Testing (Page 21)

Figures

Figure 1 – Site Location Map (Page 4)
Figure 2 – Retaining Wall Backfill Detail (Rear of Text)

Sheets

Sheet 1 – Geotechnical Map (Rear of Text)

Appendices

Appendix A – References
Appendix B – Subsurface Data
Appendix C – Laboratory Summary from Phase 1 Grading
Appendix D –General Earthwork and Grading Specifications for Rough Grading

1.0 INTRODUCTION

1.1 Site Description

The entire Bedford development includes Tracts 37030, 36294, and 37644 and encompasses approximately 275 acres of land at the foothills of the Santa Ana Mountains near the southern boundary of the City of Corona, Riverside County, California. In general, the site is bound by the Eagle Glen Specific Plan development on the north and west, by the existing residential lots to the south, and by Interstate 15 to the east.

Ascending slopes up to approximately 90 feet in height with varying slope ratios ranging from approximately 1.25:1 to 3:1 (horizontal to vertical) are present near the northern boundary of the site. In addition, steep bluffs associated with the Bedford Canyon Wash with varying slope ratios ranging from approximately 1:1 (horizontal to vertical) to near vertical are generally located near the southern boundary of the site. In general, the site can be divided into two basic regions based on topography. The lower-lying Bedford Canyon Wash area in the central and northern portion of the site and the elevated regions above the bluffs in the southern and eastern portions of the site.

The proposed Bedford Marketplace site is located in the lower-lying Bedford Canyon Wash area at the eastern boundary of the Bedford development and includes an additional parcel owned by the Riverside County Transportation Commission (RCTC). The proposed Bedford Marketplace combines the approximately 10-acre Bedford commercial parcel with the 17.85-acre RCTC parcel resulting in an approximately 27.85-acre area for commercial development. In general, Bedford Marketplace is bound by Eagle Glen Parkway/Cajalco Road to the north, Interstate 15 to the east, a flood control channel to the south, and Bedford Canyon Road to the west (Figure 1 – Site Location Map).

1.2 Background

Recommendations regarding remedial grading for the entire Bedford development, previously known as Arantine Hills, were provided by LGC Geotechnical (2014 & 2015). These recommendations were based on mass grading and stockpile plans prepared by CASC (2014 & 2015) and preliminary rough grading plans for Phase 1 prepared by Hunsaker & Associates (2015). Rough grading of Phase 1 began in October 2016 and was essentially completed in May 2017. Subsequent postgrading and construction operations for the backbone streets including Clementine Way, Hudson House Drive, and Bedford Canyon Road have also been completed.

Remedial removals and fill placement for portions of the Bedford Marketplace area were completed as a part of the Phase 1 rough grading operations. This was performed in order to facilitate the construction of backbone utilities, roadways, a basin, and a pump station adjacent to the subject commercial site. In general, remedial removals and fill placement to near design grades were completed for the Bedford commercial area and the RCTC parcel remains undeveloped (Sheet 1 – Geotechnical Map).

1.3 Project Description

The conceptual grading plan (Hunsaker, 2019) indicates relatively shallow cuts and fills with intermediate slopes on the order of approximately 20 feet in height to achieve design grades. Based on our review of the Bedford Marketplace conceptual site plan (MCG, 2019) the development will consist of restaurant and retail buildings, a gas station, a hotel, and associated parking improvements.

The conceptual grading plan prepared by Hunsaker & Associates (2019) is utilized as the base map for our Geotechnical Map (Sheet 1). It is our understanding that the provided grading plan is preliminary and changes to design grades are anticipated. The recommendations provided herein are to be based on the ultimate rough grade design. The rough grading plan should be reviewed by this office in order to verify or adjust the geotechnical recommendations provided herein.



PROJECT NAME	Bedford Marketplace
PROJECT NO.	19080-01
ENG. / GEOL.	TJL / KAD
SCALE	Not to Scale
DATE	July 2019

LGC Geotechnical, Inc.

FIGURE 1
Site Location Map

2.0 GEOTECHNICAL CONDITIONS

2.1 Regional Geology

The subject site is located along the northeastern flank of the Santa Ana Mountains, just north of the Elsinore-Temecula basin, within the Peninsular Ranges Geomorphic Province. In this area, the Santa Ana Mountains are composed of a core of metamorphic rocks of the Bedford Canyon Formation with lesser amounts of volcanic rock. Erosion has led to a series of sub-parallel canyons travelling out of the mountains. The material eroded from the mountains has formed a series of coalescing older alluvial fans, also referred to as older alluvial deposits. Subsequently these older fan deposits have been eroded by a series of younger drainage courses. The subject site is located in one of these younger drainages known as the "Bedford Canyon Wash". Additionally, the Elsinore Fault Zone located at the base of the eastern flank of the Santa Ana Mountains is considered a major active fault zone and is regionally part of the San Andreas Fault system. The San Andreas Fault system distributes right-lateral movement across the North American and Pacific Plates.

2.2 Site-Specific Geology

The majority of the site is located on alluvial deposits of the Bedford Canyon Wash with isolated zones of undocumented artificial fill associated with existing dirt roads from previous site operations. Some areas within the Bedford Marketplace commercial area have been subject to remedial grading resulting in the presence of compacted artificial fill.

2.2.1 Artificial Fill, Undocumented (Not Mapped)

Undocumented fill soils were encountered in localized areas within the subject site. These fill soils are presumed to be related to agricultural activities and the grading of dirt roads throughout the site. Undocumented fill is considered to have variable lateral extents and is anticipated to only extend approximately 2 feet below the existing ground surface. Undocumented fill soils were not mapped.

2.2.2 Artificial Fill (Symbol - Af)

Phase 1 rough grading operations included remedial removals and fill placement to near design grades within the Bedford commercial parcel. As a result, compacted artificial fill is present adjacent to Bedford Canyon Road and the existing detention basin. These fill materials were derived from onsite alluvial soils and consist of a mixture of gravel, sand, and minor amounts of silt and clay. These materials were placed with geotechnical observation and testing provided by LGC Geotechnical and are considered suitable to support proposed structures and/or additional fill soils.

2.2.3 Quaternary Alluvial Deposits (Symbol – Qal)

The alluvial deposits encountered during previous subsurface exploration (Appendix A) and Phase 1 rough grading generally consisted of interbedded layers of predominately sand and gravel with varying amounts of silt, cobbles and minor amounts of clay. Apparent density of these materials generally ranged from medium dense to very dense, increasing in depth. The alluvial deposits are present in the area of the RCTC parcel and are underlying the previously placed artificial fill (Af).

2.3 Groundwater

Groundwater and/or seepage was not encountered during rough grading of Phase 1 or during previous subsurface eploration (Appendix A). Groundwater is not considered to be an issue during site grading and development.

Seasonal fluctuations of groundwater elevations should be expected over time. In general, groundwater levels fluctuate with the seasons and local zones of perched groundwater may be present due to local seepage caused by irrigation and/or recent precipitation. Local perched groundwater conditions or surface seepage may develop once site development is completed.

2.4 Seismic Design Criteria

The site seismic characteristics were evaluated per the guidelines set forth in Chapter 16, Section 1613 of the 2016 California Building Code (CBC). Representative site coordinates of latitude 33.8191 degrees north and longitude -117.5199 degrees west were utilized in our analyses. Please note that these coordinates are considered representative of the site for preliminary planning purposes. The maximum considered earthquake (MCE) spectral response accelerations (S_{MS} and S_{M1}) and adjusted design spectral response acceleration parameters (S_{DS} and S_{D1}) for Site Class D are provided in Table 1 on the following page.

TABLE 1

Seismic Design Parameters

Selected Parameters from 2016 CBC, Section 1613 - Earthquake Loads	Seismic Design Values
Site Class per Chapter 20 of ASCE 7	D
Risk-Targeted Spectral Acceleration for Short Periods (S_S)*	2.352g
Risk-Targeted Spectral Accelerations for 1-Second Periods (S_1)*	0.918g
Site Coefficient F_a per Table 1613.3.3(1)	1.0
Site Coefficient F_v per Table 1613.3.3(2)	1.5
Site Modified Spectral Acceleration for Short Periods (S_{MS}) for Site Class D [Note: $S_{MS} = F_aS_S$]	2.352
Site Modified Spectral Acceleration for 1-Second Periods (S_{M1}) for Site Class D [Note: $S_{M1} = F_vS_1$]	1.378g
Design Spectral Acceleration for Short Periods (S_{DS}) for Site Class D [Note: $S_{DS} = (^2/_3)S_{MS}$]	1.568g
Design Spectral Acceleration for 1-Second Periods (S_{D1}) for Site Class D [Note: $S_{D1} = (^2/_3)S_{M1}$]	0.918g
Mapped Risk Coefficient at 0.2 sec Spectral Response Period, C_{RS} (per ASCE 7)	0.948
Mapped Risk Coefficient at 1 sec Spectral Response Period, C_{R1} (per ASCE 7)	0.937

* From SEAOC, 2018

Section 1803.5.12 of the 2016 CBC (per Section 11.8.3 of ASCE 7) states that the maximum considered earthquake geometric mean (MCE_G) Peak Ground Acceleration (PGA) should be used for liquefaction potential. The PGA_M for the site is equal to 0.892g.

2.5 Faulting and Seismic Hazards

The subject site is not located within a State of California Earthquake Fault Zone (i.e., Alquist-Priolo Earthquake Fault Act Zone) and no active faults are known to cross the site (CDMG, 2000). A fault is considered "active" if evidence of surface rupture in Holocene time (the last approximately 11,650 years) is present. The possibility of damage due to ground rupture is considered low since no active faults are known to cross the site.

Secondary effects of seismic shaking resulting from large earthquakes on the major faults in the Southern California region, which may affect the site, include ground lurching and shallow ground rupture, soil liquefaction, and dynamic settlement. These secondary effects of seismic shaking are a possibility throughout the Southern California region and are dependent on the distance between the site and causative fault and the onsite geology. The closest major active faults that could produce these secondary effects include the Elsinore, San Jacinto, and San Andreas Faults, among others. A discussion of theses secondary effects is provided in the following sections.

2.5.1 Liquefaction and Dynamic Settlement

Liquefaction is a seismic phenomenon in which loose, saturated, granular soils behave similarly to a fluid when subject to high-intensity ground shaking. Liquefaction occurs when three general conditions coexist: 1) shallow groundwater; 2) low density non-cohesive (granular) soils; and 3) high-intensity ground motion. Studies indicate that loose, saturated, near-surface, cohesionless soils exhibit the highest liquefaction potential, while dry, dense, cohesionless soils, and cohesive soils exhibit low to negligible liquefaction potential. In general, cohesive soils are not considered susceptible to liquefaction. Effects of liquefaction on level ground include settlement, sand boils, and bearing capacity failures below structures. Furthermore, dynamic settlement of dry sands can occur as the sand particles tend to settle and densify as a result of a seismic event.

Based on the lack of shallow groundwater (greater than 65 feet below ground surface) and anticipated geotechnical conditions subsequent to rough grading (compacted artificial fill overlying dense alluvial deposits) the potential for liquefaction to impact the site is considered very low.

2.5.2 Lateral Spreading

Lateral spreading is a type of liquefaction induced ground failure associated with the lateral displacement of surficial blocks of sediment resulting from liquefaction in a subsurface layer. Once liquefaction transforms the subsurface layer into a fluid mass, gravity plus the earthquake inertial forces may cause the mass to move downslope towards a free face (such as a river channel or an embankment). Lateral spreading may cause large horizontal displacements and such movement typically damages pipelines, utilities, bridges, and structures.

Due to the low potential for liquefaction, the potential for lateral spreading is considered very low.

2.6 Landslides

Review of readily available geologic resources and field observations of the surficial conditions do not indicate the presence of landslides on the site or in the immediate vicinity. In general, the site consists of relatively flat-lying alluvial deposits which are not considered susceptible to landslides, seismically-induced landslides, or other mass wasting processes (debris flows, rockfalls, etc.).

2.7 Expansion Potential

Based on the results of previous laboratory testing, site soils are anticipated to have a "Very Low" to "Medium" expansion potential. Final expansion potential of site soils should be determined at the completion of grading. Results of expansion potential testing at finish grades will be utilized to confirm final foundation design.

2.8 Oversized Material

Minor amounts of oversized material (material larger than 12 inches in maximum dimension) were encountered during previous subsurface exploration (Appendix A) and Phase 1 rough grading operations. Recommendations for the appropriate handling of oversized material are provided in our General Earthwork & Grading Specifications for Rough Grading (Appendix D).

2.9 Rippability

In general, the undocumented fill, artificial fill, and Quaternary Alluvial soils are anticipated to be rippable with heavy equipment (Caterpillar D-9 or equivalent).

3.0 CONCLUSIONS

Based on the results of our knowledge of the subject site, it is our opinion that the proposed improvements are feasible from a geotechnical standpoint, provided that the recommendations contained in the following sections are incorporated during site grading and development. A summary of our geotechnical conclusions are as follows:

- The near-surface onsite soils are not considered suitable for support of the planned development and will need to be removed and replaced with compacted fill materials. Removal recommendations are provided below in Section 4.1.
- Artificial fill soils placed with geotechnical observation and testing provided by LGC Geotechnical and are considered suitable to support proposed structures and/or additional fill soils. Minor reprocessing recommendations for these soils are provided below in Section 4.1.
- Groundwater and/or seepage was not encountered during rough grading of Phase 1 or during previous subsurface evaluations (Appendix A). Groundwater is not considered to be an issue during site grading and development.
- The subject site is not located within a State of California Earthquake Fault Zone (i.e., Alquist-Priolo Earthquake Fault Act Zone) and no active faults are known to cross the site (CDMG, 2000). Therefore, the possibility of damage due to ground rupture is considered low.
- The main seismic hazard that may affect the site is ground shaking from one of the active regional faults. The subject site will likely experience strong seismic ground shaking during its design life.
- Based on the lack of shallow groundwater (greater than 65 feet below ground surface) and geotechnical conditions subsequent to rough grading (compacted artificial fill overlying dense alluvium) the potential for liquefaction to impact the site is considered very low.
- Review of readily available geologic resources and field observations of the surficial conditions do not indicate the presence of landslides on the site or in the immediate vicinity. Topographically, the site is relatively flat-lying and is not considered susceptible to landslides, seismically-induced landslides, or other mass wasting processes (debris flows, rock falls, etc.).
- Based on the results of laboratory testing, site soils are anticipated to have “Very Low” to “Medium” expansion potential. Final design expansion potential must be determined at the completion of grading operations.
- In general, the undocumented fill, artificial fill, and Quaternary Alluvial soils are anticipated to be rippable with heavy equipment (Caterpillar D-9 or equivalent).
- We anticipate that the onsite soils generated from excavations will be generally suitable for re-use as compacted fill, provided they are relatively free of rocks larger than 12 inches in maximum dimension, construction debris, and significant organic material.
- It is our understanding that the conceptual grading plan (Hunsaker, 2019) is preliminary and changes to design grades are anticipated. The rough grading plan should be reviewed by this office in order to verify or adjust the geotechnical recommendations provided herein.
- Proposed slopes are to be constructed in accordance with recommendations provided herein. Subsequent to construction, the proposed slopes are anticipated to be both grossly and surficially stable.

4.0 RECOMMENDATIONS

The following recommendations are to be considered preliminary and should be confirmed upon completion of grading and earthwork operations. In addition, they should be considered minimal from a geotechnical viewpoint, as there may be more restrictive requirements from the architect, structural engineer, building codes, governing agencies, or the owner.

It should be noted that the following geotechnical recommendations are intended to provide sufficient information to develop the site in general accordance with the 2016 CBC requirements. With regard to the possible occurrence of potentially catastrophic geotechnical hazards such as fault rupture, earthquake-induced landslides, liquefaction, etc. the following geotechnical recommendations should provide adequate protection for the proposed development to the extent required to reduce seismic risk to an "acceptable level." The "acceptable level" of risk is defined by the California Code of Regulations as "that level that provides reasonable protection of the public safety, though it does not necessarily ensure continued structural integrity and functionality of the project" [Section 3721(a)]. Therefore, repair and remedial work of the proposed improvement may be required after a significant seismic event. With regards to the potential for less significant geologic hazards to the proposed development, the recommendations contained herein are intended as a reasonable protection against the potential damaging effects of geotechnical phenomena such as expansive soils, fill settlement, groundwater seepage, etc. It should be understood, however, that our recommendations are intended to maintain the structural integrity of the proposed development and structures given the site geotechnical conditions but cannot preclude the potential for some cosmetic distress or nuisance issues to develop as a result of the site geotechnical conditions.

The geotechnical recommendations contained herein must be confirmed to be suitable or modified based on the actual as-graded conditions.

4.1 Site Earthwork

Rough grading is anticipated to include remedial earthwork, excavation of cut areas, and placement of compacted fill to design grades. We recommend that earthwork onsite be performed in accordance with the following recommendations, the 2016 CBC/City of Corona requirements, and the General Earthwork and Grading Specifications for Rough Grading included in Appendix D. In case of conflict, the following recommendations shall supersede those included in Appendix D.

4.1.1 Site Preparation

Prior to the grading of areas to receive structural fill or engineered structures, these areas should be cleared of surface obstructions and unsuitable material (such as undocumented fill, colluvium, and topsoil). Vegetation and debris should be removed and properly disposed of offsite. Holes resulting from the removal of buried obstructions, which extend below proposed removal bottoms, should be replaced with suitable compacted fill material.

4.1.2 Removal Depths

All unsuitable and potentially compressible materials not removed by design cuts should be excavated to competent materials and replaced with compacted fill soils. In general, this includes all existing undocumented artificial fill, residual soil, and upper portions of the previously placed compacted fill and alluvial deposits. Removals specific to the differing types of soils are summarized below.

Previously Placed Artificial Fill: Portions of the Bedford Marketplace area were partially graded during Phase 1 rough grading operations in order to facilitate the construction of the backbone roadways and improvements. LGC Geotechnical provided observation and testing services during the Phase 1 rough grading operations. Removal bottoms achieved during Phase 1 grading were observed and accepted prior to the placement of compacted fill soils. The previously placed compacted fill (Map Symbol – Af) are considered suitable to support proposed structures and/or additional fill placement. It is recommended that the upper 1-foot of the previously placed fill soils be removed and replaced with compacted fill soils in order to remove any weathered or desiccated materials.

Alluvial Deposits: Alluvial deposits (Map Symbol – Qal) are generally located in the area of the RCTC parcel in the eastern portion of the subject site. It is anticipated that the upper approximately 5 feet of the alluvial deposits will be loose, weathered, and/or desiccated and should be removed and replaced with compacted artificial fill soils.

In general, removal depths are estimated to range between approximately 1 to 5 feet below existing grade as outline above. Estimated removal depths are depicted on the Geotechnical Map (Sheet 1). Localized areas of deeper removals should be anticipated during grading. Removal bottoms should be extended laterally in order to support a 1:1 (horizontal to vertical) projection away from proposed structures or improvements. The actual depths and lateral extents of removals will be determined by the geotechnical consultant during grading based on the actual subsurface conditions encountered.

Several methods will be utilized in determining the suitability of the material observed in the removal bottom excavations. Observation of material, proof rolling, probing, and occasional field density testing of the removal bottoms shall be performed by a field technician and/or field geologist to verify removal bottom suitability. When field density test data is utilized for the approval of a removal bottom, an in-place relative compaction of 85 percent or greater and/or a degree of saturation of 85 percent or greater will be considered suitable.

4.1.3 Over-Excavation

In order to provide a uniform fill blanket beneath proposed structures, it is recommended that design cut and cut/fill transition pads be over-excavated a minimum of 3 feet below ultimate finish pad grade based on the future rough grading design. A maximum 3:1 differential fill thickness underneath individual lots should be maintained in order to

reduce the potential for future differential settlement. Over-excavation should extend laterally a minimum of 5 feet beyond proposed building footprints.

Streets in design cut areas should be over-excavated a minimum of 2 feet below design subgrade elevations. In addition, retaining wall footings located on cut or a cut/fill transition should be over-excavated a minimum of 2 feet below and 2 feet beyond the edges of the proposed footings.

It is our opinion that utility excavations may be completed utilizing typical heavy machinery. The native soils at the site are generally uncemented alluvial soils (Class "C" per Cal OSHA) and are anticipated to be unstable when excavated vertically, see Section 4.1.5. At the owner's discretion the streets could be overexcavated, such that utility trenches will then be excavated through compacted fill soils. If desired, it is recommended that the street overexcavation extend approximately 2-foot below the lowest utility.

Over-excavations/undercuts must be confirmed and mapped by the geotechnical consultant prior to subsequent fill placement. The actual depth and lateral extents of over-excavation should be determined by the geotechnical consultant during grading based on the actual subsurface conditions encountered. Please note that some estimated removals in the western portion of the site may extend deeper than the recommended over-excavation in order to remove unsuitable materials.

4.1.4 Removal Bottoms and Subgrade Preparation

In general, removal bottoms, over-excavation bottoms, and areas to receive compacted fill should be scarified to a minimum depth of 6 to 8 inches, brought to a near-optimum moisture condition (generally within optimum and 2 percent above optimum moisture content) and re-compacted per project requirements.

Removal bottoms, over-excavation/undercut bottoms, and areas to receive fill should be observed and accepted by the geotechnical consultant prior to fill placement.

4.1.5 Temporary Excavations

Temporary excavations should be performed in accordance with project plans, specifications, and applicable Occupational Safety and Health Administration (OSHA) requirements. Excavations should be laid back or shored in accordance with OSHA requirements before personnel or equipment are allowed to enter. The majority of site alluvial soils are anticipated to be OSHA Type "C" soils. Soil conditions should be regularly evaluated during construction to verify conditions are as anticipated. The contractor shall be responsible for providing the "competent person" required by OSHA standards to evaluate the soil conditions. Close coordination with the geotechnical consultant should be maintained to facilitate construction while providing safe excavations. Excavation safety is the sole responsibility of the contractor.

Vehicular traffic, stockpiles, and equipment storage should be set back from the perimeter

of excavations a minimum distance equivalent to a 1:1 projection from the bottom of the excavation or 5 feet, whichever is greater. Once an excavation has been initiated, it should be backfilled as soon as practical. Prolonged exposure of temporary excavations may result in some localized instability. Excavations should be planned so that they are not initiated without sufficient time to shore/fill them prior to weekends, holidays, or forecasted rain.

4.1.6 Material for Fill

From a geotechnical perspective, the onsite soils are generally considered suitable for use as general compacted fill, provided they are screened of construction debris, any oversized material (12 inches in greatest dimension), and significant organic content. From a geotechnical perspective, compacted fill with an average organic content less than 2 percent is generally not considered significant. Any oversized material (greater than 12 inches in maximum dimension) encountered must be appropriately handled as outlined in Appendix D.

From a geotechnical viewpoint, any required import soils (excluding retaining wall backfill import) should consist of clean, relatively granular soils of Low expansion potential (expansion index 50 or less based on ASTM D4829) and no particles larger than 3 inches in greatest dimension. Source samples of planned importation should be provided to the geotechnical consultant for laboratory testing a minimum of 10 working days prior to any planned importation.

Retaining wall backfill should consist of sandy soils with a maximum of 35 percent fines (passing the No. 200 sieve) per American Society for Testing and Materials (ASTM) Test Method D1140 (or ASTM D6913/D422) and a Very Low expansion potential (EI of 20 or less per ASTM D4829). Soils should also be screened of organic materials, construction debris, and any material greater than 3 inches in maximum dimension. Portions of the onsite soil may not be suitable for retaining wall backfill due to their fines content (i.e., silt and clay content) and expansion potential. Therefore, either select grading and stockpiling and/or import of suitable soils meeting the criteria outlined above will be required.

Aggregate base should conform to the requirements of Section 200-2 of the Standard Specifications for Public Works Construction ("Greenbook") for untreated base materials, Caltrans Class 2 aggregate base and/or the County of Riverside requirements.

4.1.7 Fill Placement and Compaction

Material to be placed as fill should be brought to near optimum moisture content (generally within optimum and 2 percent above optimum moisture content) and compacted to at least 90 percent relative compaction (per ASTM D1557). Moisture conditioning of site soils will be required in order to achieve adequate compaction. Due to the granular nature of the site soils, pre-watering the site prior to grading may be beneficial. The optimum lift thickness to produce a uniformly compacted fill will depend

on the type and size of compaction equipment used. In general, fill should be placed in uniform lifts not exceeding 8 inches in compacted thickness. Each lift should be thoroughly compacted and accepted prior to subsequent lifts. Generally, placement and compaction of fill should be performed in accordance with local grading ordinances with observation and testing performed by the geotechnical consultant.

Fill placed on any slopes greater than 5:1 (horizontal to vertical) inclination should be properly keyed and benched into firm and competent soils as it is placed in lifts. During backfill of temporary excavations, fill should be properly benched into firm and competent soils as it is placed in lifts and compacted.

Slope face compaction must be achieved by the contractor by overfilling the slope face a minimum of 2 feet and cutting back to design finish grades or by other acceptable methods.

Aggregate base material should be compacted to a minimum of 95 percent relative compaction at or slightly above optimum moisture content per ASTM D1557. Subgrade below aggregate base should be compacted to a minimum of 90 percent relative compaction at or slightly above optimum moisture content per ASTM D1557.

4.1.8 Shrinkage and Bulking

Volumetric changes in earth quantities will occur when excavated onsite earth materials are replaced as properly compacted fill. The following is an estimate of shrinkage factors for the various geologic units found onsite. These estimates are based on in-place densities of the various materials and on the estimated average degree of relative compaction that will be achieved during grading.

TABLE 2

Estimated Shrinkage

Soil Type	Allowance	Estimated Range
Artificial Fill (Af)	Shrinkage/Bulk	+/- 5%
Alluvial Deposits (Qal) – Upper 4 Feet	Shrinkage	10 to 15%
Alluvial Deposits (Qal) – Below 4 Feet	Shrinkage	0 to 10%

Subsidence due to earthwork equipment is expected to be on the order of 0.1-foot. It should be stressed that these values are only estimates and that actual shrinkage factors are extremely difficult to predict. The effective shrinkage of onsite soils will depend primarily on the type of compaction equipment and method of compaction used onsite by the contractor. The above shrinkage estimates are intended as an aid for others in determining preliminary earthwork quantities. However, these estimates should be used

with some caution since they are not absolute values.

If importing/exporting a large volume of soils is not considered feasible or economical, we recommend a balance area be designated onsite that can fluctuate up or down based on the actual volume of soil. We recommend a "balance" area that can accommodate on the order of 5 to 10 percent (plus or minus) of the total grading volume be considered.

Volumetric changes based on quantities from previous grading activities (Phase 1, Channel, etc.) should also be reviewed and taken into consideration.

4.1.9 Trench and Retaining Wall Backfill and Compaction

The onsite soils may generally be suitable as trench backfill, provided the soils are screened of rocks and other material greater than 6 inches in diameter and organic matter. If trenches are shallow or the use of conventional equipment may result in damage to the utilities, sand having a sand equivalent (SE) of 30 or greater (per California Test Method [CTM] 217) may be used to bed and shade the pipes. Sand backfill within the pipe bedding zone may be densified by jetting or flooding and then tamped to ensure adequate compaction. Subsequent trench backfill should be compacted in uniform thin lifts by mechanical means to at least a minimum 90 percent relative compaction (per ASTM D1557). It is our understanding that the upper 3 feet of trench backfill below proposed street subgrade is to be compacted to a minimum 95-percent relative compaction in accordance with requirements set forth by the City of Corona.

Retaining wall backfill should consist of sandy soils as outlined in the preceding Section 4.1.6. The limits of select sandy backfill should extend at minimum ½ the height of the retaining wall or the width of the heel (if applicable), whichever is greater, refer to Figure 2 (rear of text). Retaining wall backfill soils should be compacted in relatively uniform thin lifts to at least 90 percent relative compaction (per ASTM D1557). Jetting or flooding of retaining wall backfill materials should not be permitted.

A representative from LGC Geotechnical should observe and test the backfill to verify compliance with the project recommendations.

4.2 Slope Stability

4.2.1 Cut Slopes

Stabilization fills should be constructed on proposed cut slopes over 5 feet in height in accordance with the detail provided in Appendix D. Keyway widths should be a minimum of 15 feet wide. Keyways should be a minimum of 2 feet deep, determined from the lowest toe-of-slope elevation, and tilted back towards the heel a minimum 2 percent or 1-foot (whichever is greater).

Stabilization fill backcuts should be excavated so that at least a minimum 15-foot fill width

is maintained for the entire height of the stability fill slope. In general, backcuts should be excavated at a maximum 1.5:1 (horizontal to vertical) inclination. Properly outletted back drains should be constructed along stabilization fill backcuts in accordance with the General Earthwork and Grading Specifications for Rough Grading included in Appendix D. Flatter backcut inclinations may be required based on observed conditions during grading. The backcuts should not be initiated prior to forecasted rain or be left open for extended periods of time.

Backcuts and keyway excavations must be geologically mapped by the geotechnical consultant during excavation to confirm the anticipated conditions. If adverse conditions are exposed, additional analysis and/or remediation measures may be required. The grading contractor must trim the backcuts with a slope board to remove loose material to allow for confirmational mapping. Updated and/or revised geotechnical recommendations may be required based on observed conditions.

4.2.2 Fill Slopes

Design fill slopes depicted on the grading study (Hunsaker, 2019) are anticipated to be both grossly and surficially stable as designed provided they are constructed in accordance with the General Earthwork and Grading Specifications for Rough Grading included in Appendix D and properly maintained subsequent to construction (Section 4.2.3). Fill slopes should be constructed with a maximum slope ratio of 2:1 (horizontal to vertical). Slope faces should also be compacted to project recommendations. To improve surficial stability, vegetation specified by the landscape architect should be established on the slope face as soon as it is practical.

4.2.3 Slope Maintenance Guidelines

It is recommended that any graded slopes be planted with groundcover vegetation as soon as practical to protect against erosion by reducing runoff velocity. Deep-rooted vegetation that requires little water and is able to survive local climate conditions should also be established to protect against surficial slumping. Under no circumstances should slopes be allowed to be bare of vegetation. Landscape vegetation must not be "trimmed" to root structures leaving no protection of the slopes. Irrigation levels should be kept to the minimum level necessary to establish healthy plant growth. Slopes must not be overwatered. If automatic sprinklers are used, they must be adjusted during periods of rainfall. A landscape professional must be consulted for landscape recommendations.

A program for the elimination of burrowing animals in both native and graded slope areas must be established to protect slope stability by reducing the potential for surface water to penetrate into the slope face. Continuous erosion control, rodent control, and maintenance are essential to the long-term stability of all slopes. Trenches excavated on a slope face for utility or irrigation lines and/or for any purpose must be properly backfilled and compacted to project recommendations to the slope face. Observation/testing and acceptance by the geotechnical consultant during trench

backfill are recommended. V-ditches should be inspected and cleared of loose soil and/or debris on a routine basis, especially prior to and during the rainy season.

4.3 Subdrains

If unanticipated groundwater or areas of potential future groundwater seepage and/or accumulation are encountered during grading subdrain systems may be recommended by the geotechnical consultant. Subdrains are to be properly outletted and connected to a suitable discharge point.

A representative of the project civil engineer should survey the installed subdrains for alignment and grade prior to fill placement above the subdrains. The location and elevations of subdrains and subdrain outlets should be recorded on as-built plans and made available to future homeowners and/or homeowner associations. It is the responsibility of the contractor to locate and protect subdrain outlets prior to the completion of work.

4.4 Provisional Soil Bearing and Lateral Resistance

An allowable soil bearing pressure of 2,000 pounds per square foot (psf) may be used for the design of footings having a minimum width of 12 inches and a minimum embedment of 24 inches below lowest adjacent ground surface. This value may be increased by 300 psf for each additional foot of embedment or 100 psf for each additional foot of foundation width to a maximum value of 2,500 psf. In addition, an allowable soil bearing pressure of 1,200 psf may be used for a mat post-tensioned slab a minimum of 6 inches below lowest adjacent grade. These allowable bearing pressures are applicable for level (ground slope equal to or flatter than 5H:1V) conditions only. Bearing values indicated are for total dead loads and frequently applied live loads and may be increased by ⅓ for short duration loading (i.e., wind or seismic loads). These values are presented under the assumption that the soils surrounding the foundation will remain intact. For shallow foundations with less than approximately 24 inches of embedment, we recommend that homeowners be advised not to excavate adjacent to their foundations. In addition, shallow foundations with less than approximately 24 inches of embedment have a greater potential of moisture migrating beneath the slab from outside sources.

In utilizing the above-mentioned allowable bearing capacity and provided our earthwork recommendations are implemented, total foundation settlement due to soil and structural loads is anticipated to be on the order of 2 inches. Differential settlement may be taken as half of the total settlement (i.e., 1-inch over a horizontal span of 40 feet).

Resistance to lateral loads can be provided by friction acting at the base of foundations and by passive earth pressure. For concrete/soil frictional resistance, an allowable coefficient of friction of 0.35 may be assumed with dead-load forces. An allowable passive lateral earth pressure of 300 psf per foot of depth (or pcf) to a maximum of 2,500 psf may be used for the sides of footings poured against properly compacted fill. This passive pressure is applicable for level (ground slope equal to or flatter than 5H:1V) conditions only. The passive pressure may be increased by one-third due to wind or seismic forces. We recommend that the upper foot of passive resistance be neglected if finished grade will not be covered with concrete or asphalt. Frictional resistance and passive pressure may be used in combination without reduction. The

provided allowable passive pressures are based on a factor of safety of 1.5 and may be increased by one-third for short duration seismic loading conditions.

4.5 Lateral Earth Pressures for Retaining Walls

Based on our review, retaining walls up to approximately 8 feet in height are planned for the subject site. Lateral earth pressures are provided as equivalent fluid unit weights, in pounds per square foot (psf) per foot of depth or pcf. These values do not contain an appreciable factor of safety, so the retaining wall designer should apply the applicable factors of safety and/or load factors during design. A soil unit weight of 130 pcf may be assumed for calculating the actual weight of soil over the wall footing.

The following lateral pressures presented on Table 3 are for approved onsite soils with a maximum of 35 percent fines (passing the No. 200 sieve) per American Society for Testing and Materials (ASTM) Test Method D1140 (or ASTM D6913/D422) and a Very Low expansion potential (EI of 20 or less per ASTM D4829). The retaining wall designer should clearly indicate on the retaining wall plans that the backfill material is to be approved onsite soils.

TABLE 3

Lateral Earth Pressures – Select Onsite Backfill

Condition	**Equivalent Fluid Weight (pcf)**	**Equivalent Fluid Weight (pcf)**
	Level Backfill	**2:1 Sloping Backfill**
	Approved Backfill Material	**Approved Backfill Material**
Active	40	60
At-Rest	60	93

If the wall can yield enough to mobilize the full shear strength of the soil, it can be designed for "active" pressure. If the wall cannot yield under the applied load, the earth pressure will be higher. This would include 90-degree corners of retaining walls. Such walls should be designed for "at-rest." The equivalent fluid pressure values assume free-draining conditions. If conditions other than those assumed above are anticipated, the equivalent fluid pressure values should be provided on an individual-case basis by the geotechnical engineer. We recommend retaining walls be provided with construction joints in order to mitigate cosmetic distress from wall movement.

Surcharge loading effects from any adjacent structures should be evaluated by the retaining wall designer. In general, structural loads within a 1:1 (horizontal to vertical) upward projection from the bottom of the proposed retaining wall footing will surcharge the proposed retaining wall. In addition to the recommended lateral earth pressure, retaining walls adjacent to streets should be designed to resist a uniform lateral pressure of 100 pounds per square foot

(psf) due to normal street vehicle traffic, if applicable. The retaining wall designer should contact the geotechnical engineer for any required geotechnical input in estimating surcharge loads.

If required, the retaining wall designer may use a seismic lateral earth pressure increment of 14 pcf. This increment should be applied in addition to the provided static lateral earth pressure using a triangular distribution with the resultant acting at H/3 in relation to the base of the retaining structure (where H is the retained height). Per Section 1803.5.12 of the California Building Code (CBC), the seismic earth pressure is applicable to "structures assigned to Seismic Design Category D, E, or F in accordance with Section 1613." This seismic lateral earth pressure is estimated using the procedure outlined by the Structural Engineers Association of California (Lew, et al, 2010). The provided seismic lateral earth pressure is for a level backfill condition. Due to the sensitivity of seismic earth pressures for sloping conditions, the retaining wall designer should provide the geotechnical engineer with cross sections based on the configuration of the planned retaining walls in order to estimate the specific seismic increment.

Retaining wall structures should be provided with appropriate drainage and appropriately waterproofed. To reduce, but not eliminate, saturation of near surface soils (1-foot) in front of the retaining walls, the perforated subdrain pipe should be located a minimum of 1-foot below lower adjacent (non-retained) pad grade. The outlet pipe should be sloped to drain to a suitable outlet. We do not recommend retaining wall outlet pipes be connected to area drains. If subdrains are connected to area drains, special care and information should be provided to homeowners to maintain these drains. Typical retaining wall drainage is illustrated in Figure 2. It should be noted that the recommended subdrain does not provide protection against seepage through the face of the wall and/or efflorescence. Efflorescence is a white crystalline powder (discoloration) that results when water containing soluble salts migrates over a period of time through the face of a retaining wall and evaporates. If such seepage or efflorescence is undesirable, retaining walls should be waterproofed accordingly to reduce this potential.

4.6 Fences and Freestanding Walls

As their name indicates, freestanding walls are those walls not designed to retain soil and/or water. These walls are generally located at the rear or side yard of lots. To reduce the potential for unsightly cracks due to differential settlement, we recommend the inclusion of construction joints at a maximum spacing of 16 feet on-center. This spacing may be altered by the structural engineer based upon the wall reinforcement. If the soil-moisture content below the wall foundation varies significantly, some wall movement should be expected. However, movement is unlikely to cause more than cosmetic distress. Allowable soil bearing values for wall footing design are provided in Section 4.4 above.

4.7 Subsurface Infiltration

Recent regulatory changes have occurred that mandate that storm water be infiltrated below grade into subsurface soils rather than collected in a conventional storm drain system. Typically, a combination of methods is implemented to reduce surface water runoff and increase infiltration including; permeable pavements/pavers for roadways and walkways, directing surface water runoff to grass-lined swales, retention areas, and/or drywells, etc.

It should be noted that collecting and concentrating surface water for the purpose of intentionally infiltrating below grade, conflicts with the geotechnical engineering objective of directing surface water away from slopes, structures and other improvements. The geotechnical stability and integrity of a site is reliant upon appropriately handling surface water.

Infiltration rates were previously estimated for the site in the area of the large basin in the southeastern portion of the site (LGC Geotechnical, 2016). Estimation of infiltration rates was performed in general accordance with guidelines set forth by the County of Riverside (2011). The tested infiltration rates are considered representative of the site soils in the southeast portion of the site. These tested infiltration rates do not include any factor of safety but have been normalized to correct the 3-Dimensional flow that occurs within the field test to 1-Dimensional flow out of the bottom of the boring. The approximate infiltration test locations are shown on the Geotechnical Map (Sheet 1) and the infiltration test data is summarized in Table 2 on the following page.

TABLE 4

Summary of Infiltration Testing

Boring/Infiltration Location	Approx. Depth Below EG (ft)	Approx. Bottom of Infiltration Test Elevation (ft)	Infiltration Rate (in/hr.)	
			Tested	Design*
I-1A	9.95	907	3.0	1.0
I-2A	9.85	904	1.0	0.33
I-1B	6	908	7.4	2.5
I-2B	6	908	27.7	9.2
I-3B	4	908	13.9	4.6

*Includes a minimum factor of safety of 3 from Tested Rate per Table 1 – Infiltration Testing Requirements, County of Riverside Guidelines (2011).

It should be emphasized that infiltration test results are only representative of the location and depth where they are performed. Varying subsurface conditions may exist outside of the test locations which could alter the calculated infiltration rates indicated above. Infiltration tests are performed using relatively clean water free of particulates, silt, etc.

Based on the previous infiltration testing data and our knowledge of the site soils, it is recommended that a provisional design infiltration rate of 2.0 inches per hour may be utilized for infiltration systems associated with Bedford Marketplace. The recommended infiltration rate provided herein shall be verified prior to construction based on final locations and elevations of proposed infiltration systems.

4.7 Control of Surface Water and Drainage Control

From a geotechnical perspective, we recommend that compacted finished grade soils adjacent to proposed structures be sloped away from the proposed structures and towards an approved drainage device or unobstructed swale. Drainage swales, wherever feasible, should not be constructed within 5 feet of buildings. Where lot and building geometry necessitates that drainage swales be routed closer than 5 feet to structural foundations, we recommend the use of area drains together with drainage swales. Drainage swales used in conjunction with area drains should be designed by the project civil engineer so that a properly constructed and maintained system will prevent ponding within 5 feet of the foundation. Code compliance of grades is not the purview of the geotechnical consultant.

Planters with open bottoms adjacent to buildings should be avoided. Planters should not be designed adjacent to buildings unless provisions for drainage, such as catch basins, liners, and/or area drains, are made. Overwatering must be avoided.

4.8 Geotechnical Plan Review

When available, project plans (grading, foundation, etc.) should be reviewed by LGC Geotechnical from a geotechnical viewpoint and updated recommendations shall be provided as necessary. Additional field work may be necessary based on the proposed design.

4.9 Geotechnical Observation and Testing

The recommendations provided in this report are based on limited subsurface observations and geotechnical analysis. The interpolated subsurface conditions should be checked in the field during construction by a representative of LGC Geotechnical. Geotechnical observation and testing is required per Section 1705 of the 2016 California Building Code (CBC).

Geotechnical observation and/or testing should be performed by LGC Geotechnical at the following stages:

- During grading (removal bottoms, fill placement, etc.);
- During retaining wall backfill and compaction;
- During utility trench backfill and compaction;
- After presoaking building pad and other concrete-flatwork subgrades, and prior to placement of aggregate base or concrete;
- Preparation of pavement subgrade and placement of aggregate base;
- After building and wall footing excavation and prior to placement of steel reinforcement and/or concrete; and
- When any unusual soil conditions are encountered during any construction operation subsequent to issuance of this report.

5.0 LIMITATIONS

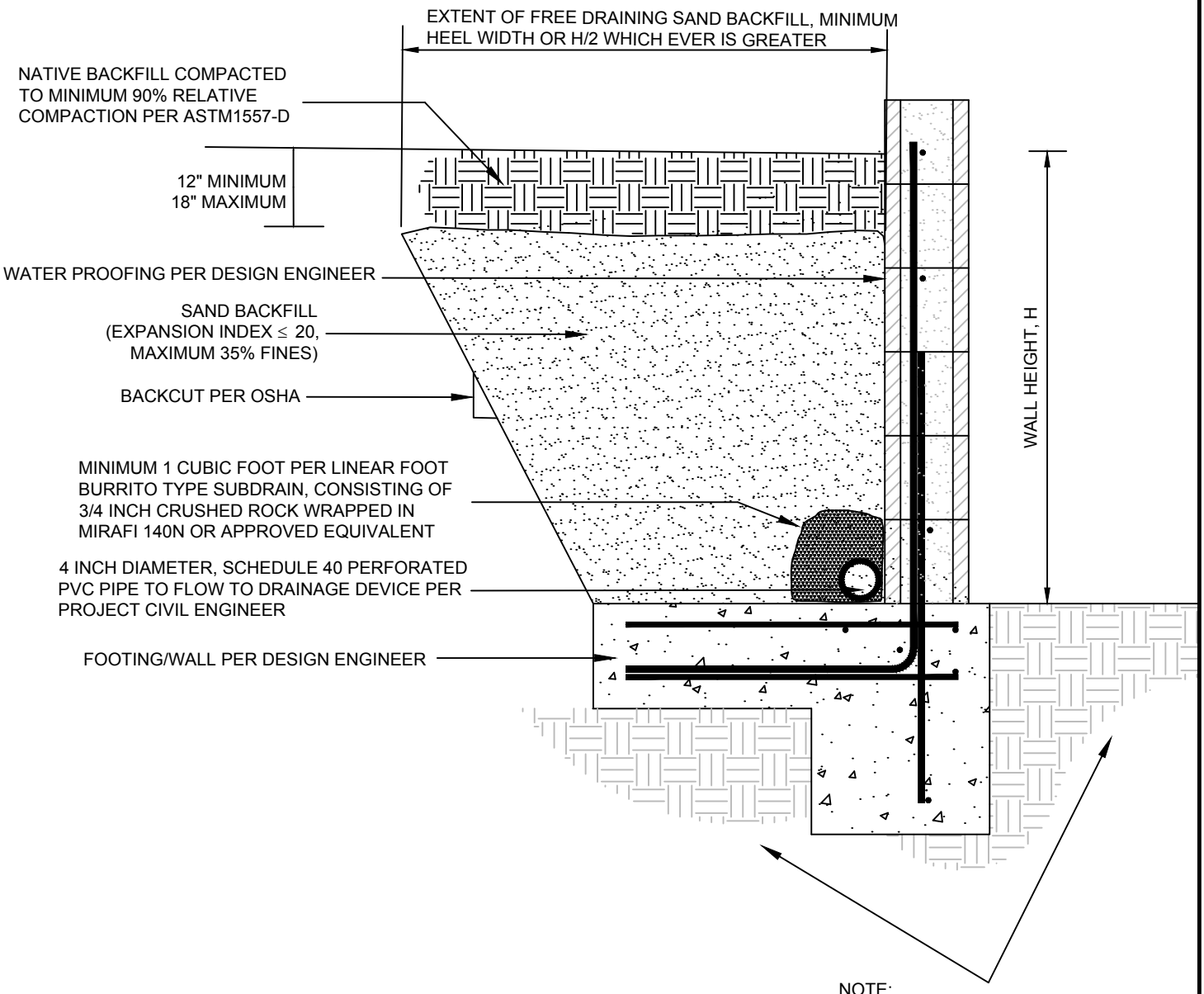
Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable soils engineers and geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report.

This report is based on data obtained from limited observations of the site, which have been extrapolated to characterize the site. While the scope of services performed is considered suitable to adequately characterize the site geotechnical conditions relative to the proposed development, no practical evaluation can completely eliminate uncertainty regarding the anticipated geotechnical conditions in connection with a subject site. Variations may exist and conditions not observed or described in this report may be encountered during grading and construction.

This report is issued with the understanding that it is the responsibility of the owner, or of his/her representative, to ensure that the information and recommendations contained herein are brought to the attention of the other consultants (at a minimum the civil engineer, structural engineer, landscape architect) and incorporated into their plans. The contractor should properly implement the recommendations during construction and notify the owner if they consider any of the recommendations presented herein to be unsafe, or unsuitable.

The findings of this report are valid as of the present date. However, changes in the conditions of a site can and do occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. The findings, conclusions, and recommendations presented in this report can be relied upon only if LGC Geotechnical has the opportunity to observe the subsurface conditions during grading and construction of the project, in order to confirm that our preliminary findings are representative for the site. This report is intended exclusively for use by the client, any use of or reliance on this report by a third party shall be at such party's sole risk.

In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and modification.



LGC Geotechnical, Inc.

FIGURE 2

Retaining Wall Backfill Detail

(Approved On-Site or Imported Sand Backfill)

PROJECT NAME	Bedford Marketplace
PROJECT NO.	19080-01
ENG.	TJL / /KAD
SCALE	Not to Scale
DATE	July 2019

Appendix A
References

APPENDIX A

References

American Concrete Institute, 2014, Building Code Requirements for Structural Concrete (ACI 318-14) and Commentary (ACI 318R-14).

American Society of Civil Engineers (ASCE), 2013, Minimum Design Loads for Buildings and Other Structures, ASCE/SEI 7-10, Third Printing, 2013.

ASTM International, Annual Book of ASTM Standards, Volume 04.08.

California Building Standards Commission, 2016, California Building Code, California Code of Regulations Title 24, Volumes 1 and 2, dated July 2016.

California Department of Conservation, Division of Mines and Geology, 1997, Guidelines for Evaluating and Mitigating Seismic Hazards in California, CDMG Special Publication 117.

_____, 2000, Digital Images of Official Maps of Alquist-Priolo Earthquake Fault Zones of California, Southern Region, CDMG CD 2000-03.

CASC Engineering and Consulting (CASC) 2014, City of Corona, State of California, Mass Grading Plans, Tract No. 36294, cad file received via email July 23, 2014.

_____, 2015, City of Corona, State of California, Mass Grading Plans, TTM 32694, Arantine Hills, Sheets 1 through 46, dated September 22, 2015.

County of Riverside, 2011, Low Impact Development BMP Design Handbook, Appendix A – Infiltration Testing, revised September 2011.

Hunsaker & Associates, 2019, Conceptual Grading Plan, Bedford Marketplace, dated July 19, 2019.

LGC Geotechnical, Inc., 2014, Geotechnical Mass Grading Plan Review and Preliminary Geotechnical Recommendations for Proposed "Arantine" Residential Development, Tract 36294, City of Corona, California, Project No. 13208-01, dated August 7, 2014.

_____, 2015, Preliminary Geotechnical Recommendations of Remedial Grading Conditions for the Proposed "Arantine" Residential Development, Tract 36294, City of Corona, California, Project No. 13208-01, dated March 10, 2015.

_____, 2019, Geotechnical Rough Grading Plan Review of Tract 37644, Phase 2 of the Bedford Development, City of Corona, California, Project No. 13208-01, dated May 31, 2019.

Lew, et al, 2010, Seismic Earth Pressures on Deep Basements, Structural Engineers Association of California (SEAOC) Convention Proceedings.

LOR Geotechnical Group, Inc., 2002, Preliminary Geotechnical Feasibility Investigation, 580± Acres, Bedford Canyon, Corona Area, Riverside County, California, Project No. 31558.1, dated March 25, 2002.

_____, 2003, Preliminary Update and Document Review of Seismic Hazards, 508 ± Acres, Bedford Canyon, Corona, California, Project No. 31558.3, dated February 5, 2003.

_____, 2004, Addendum Fault Investigation, 508 ± Acres, Arantine Hills, Corona, California, Project No. 31558.32, dated November 16, 2004.

_____, 2009, Arantine Hills Master Planned Community, City of Corona, Riverside County, California, Project No. 31558.14, dated October 15, 2009.

_____, 2010, Bedford Canyon Bluff Slope Failure Considerations as a Factor in the Baseline Sediment Yield and Transport Study, Arantine Hills Master Planned Community, City of Corona, Riverside County, California, Project No. 31558.92, dated March 9, 2010.

Structural Engineers Association of California (SEAOC), 2019, Seismic Design Maps, Retrieved June 18, 2019, from https://seismicmaps.org/

Appendix B
Subsurface Data

From LOR, 2002

APPENDIX B
FIELD INVESTIGATION

Subsurface Exploration

The site was investigated on January 31, February 1, 4 through 7, and 14 of 2002 and consisted of excavating a total of 31 trenches to depths between 4.5 to 15.0 feet below the existing ground surface and advancing a total of 23 borings to depths between 24.0 and 51.1 feet below the existing ground surface. The approximate locations of the trenches and borings are shown on Enclosures A-7 and A-8, within Appendix A.

The exploration was conducted using a FORD 555 E backhoe with a 24-inch bucket. The soil encountered were continuously logged by a geologist from this firm who visually observed the site, maintained detailed logs of the trenches, obtained disturbed soil samples for laboratory evaluation and testing, and classified the soils encountered by visual examination in accordance with the Unified Soil Classification System.

In-place density determinations were conducted at selected levels, within the trenches utilizing the Nuclear Gauge Method (ASTM D 2922). Disturbed soil samples were obtained at soil changes and other selected levels within the trenches. The samples were placed in sealed containers for transport to the laboratory.

The exploration was conducted using a CME-55 drill rig equipped with an 8-inch diameter hollow stem auger. The soils were continuously logged by a geologist from this firm who inspected the site, maintained detailed logs of the borings, obtained undisturbed, as well as disturbed, soil samples for evaluation and testing, and classified the soils by visual examination in accordance with the Unified Soil Classification System.

Relatively undisturbed samples of the subsoils were obtained at a maximum interval of 5 feet. The samples were recovered by using a California split barrel sampler of 2.50 inch inside diameter and 3.00 inch outside diameter from the ground surface to 35 feet deep. The samplers were driven by a 140 pound automatic trip hammer dropped from a height of 30 inches. The number of hammer blows required to drive the sampler into the ground the final 12 inches were recorded and further converted to an equivalent SPT N-value. Factors such as efficiency of the automatic trip hammer used during this investigation (80%), borehole diameter (8"), and rod length at the test depth were considered for further computing of equivalent SPT N-values corrected for

field procedures ($\approx N_{60}$) which are included in the boring logs, Enclosures B-1 through B-23.

The undisturbed soil samples were retained in brass sample rings of 2.42 inches in diameter and 1.00 inch in height, and placed in sealed plastic containers. Disturbed soil samples were obtained at selected levels within the borings and placed in sealed containers for transport to the laboratory.

All samples obtained were taken to our laboratory for storage and testing. Detailed logs of the trenches and borings are presented on the enclosed Trench and Boring Logs, Enclosures B-1 through B-54. A Sampling Key is presented on Enclosure B.

CONSISTENCY OF SOILS

SANDS

SPT BLOWS	CONSISTENCY
0 - 4	Very loose
4 - 10	Loose
10 - 30	Medium dense
30 - 50	Dense
Over 50	Very dense

COHESIVE SOILS

SPT BLOWS	CONSISTENCY
0 - 2	Very soft
2 - 4	Soft
4 - 8	Medium
8 - 15	Stiff
15 - 30	Very stiff
30 - 60	Hard
Over 60	Very Hard

SAMPLING KEY

Symbol	Description
	- INDICATES CALIFORNIA SPLIT SPOON SOIL SAMPLE
	- INDICATES SAND CONE OR NUCLEAR DENSITY TEST
	- INDICATES BAG SAMPLE
	- INDICATES STANDARD PENETRATION TEST (SPT) SOIL SAMPLE

MAJOR DIVISIONS			LITHOLOGY	U.S.C.S.	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS: MORE THAN 50% OF MATERIAL IS LARGER THAN 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS: MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GARVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS: MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SAND, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS: MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF RICH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS AND MANURE WITH HIGH ORGANIC MATERIALS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS.

PARTICLE SIZE LIMITS

BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

12" 3" ¾" No. 4 No. 10 No. 40 200

(U.S. STANDARD SIEVE SIZE)

SAMPLE KEY

PROJECT: 580± ACRES, BEDFORD CANYON, CORONA AREA, RIVERSIDE CO., CA	PROJECT NO.: 31558.1
CLIENT: BLUESTONE COMMUNITIES	ENCLOSURE: B
LOR Geotechnical Group, Inc.	DATE: MARCH 2002
	SCALE: NO SCALE

LOG OF BORING B-1

DEPTH IN FEET	EQUIVALENT SPT BLOW COUNTS	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	SAMPLE TYPE	U.S.C.S	DESCRIPTION
0		5.2		T	SM	TOPSOIL/FERTILIZER 2 inches thick.
	16	3.7	102.0		SM	@ 0.2 feet TOPSOIL: SILTY SAND with gravel, approximately 15% angular gravel to 2", 10% coarse grained sand, 15% medium grained sand, 30% fine grained sand, 30% silty fines, dark brown, damp.
						@ 1 foot ALLUVIUM: SILTY SAND with gravel, approximately 15% angular gravel to 2", 15% coarse grained sand, 20% medium grained sand, 30% fine grained sand, 20% silty fines, grayish brown, damp.
5		9.2	113.1			
10	27	8.1	92.7			@ 10 feet becomes finer grained, approximately 70% fine grained sand, 30% silty fines, dark brown, damp.
15	36	2.8	121.2			@ 15 feet becomes coarser grained, approximately 20% fine gravel, 10% coarse grained sand, 20% medium grained sand, 35% fine grained sand, 15% silty fines, brown, damp.
20	50-6"	1.6	115.8			END OF BORING DUE TO REFUSAL ON BOULDER
25						No fill No caving No groundwater No bedrock
30						
35						

PROJECT: 500+ Acres in Bedford Canyon, Corona, CA		PROJECT NUMBER:	31558.1
CLIENT:	Bluestone Communities	ELEVATION:	904
		DATE DRILLED:	January 31, 2002
LOR GEOTECHNICAL GROUP INC.		EQUIPMENT:	CME 55
		HOLE DIA.: 8"	ENCLOSURE: B-1

LOG OF BORING B-18

DEPTH IN FEET	EQUIVALENT SPT BLOW COUNTS	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S	DESCRIPTION
		TEST DATA					
0		5.2				SM	FILL: SILTY SAND, approximately 5% fine gravel, 10% coarse grained sand, 15% medium grained sand, 35% fine grained sand, 35% silty fines, brown, damp, loose.
	18	5.5	92.2				
						SM	@ 3 feet ALLUVIUM: SILTY SAND, approximately 5% fine subrounded gravel, 15% coarse grained sand, 20% medium grained sand, 30% fine grained sand, 30% silty fines, dark brown, damp.
5	23	2.8	117.3				
10	7	7.3	122.6				@ 10 feet becomes finer grained, approximately 10% coarse grained sand, 15% medium grained sand, 40% fine grained sand, 35% silty fines, brown, damp. @ 11 feet very difficult drilling on cobbles or gravel.
15	17	2.8	113.2				
20	26	5.0	121.8				@ 20 feet becomes coarser grained, approximately 10% fine gravel, 15% coarse grained sand, 30% medium grained sand, 20% fine grained sand, 25% silty fines, brown, damp. @ 22 feet very difficult drilling on gravel and/or cobbles.
							END OF BORING DUE TO SLOW PROGRESS
25							Fill 0-3' No caving No groundwater No bedrock
30							
35							

PROJECT: **500+ Acres in Bedford Canyon, Corona, CA**		PROJECT NUMBER:	**31558.1**
CLIENT:	**Bluestone Communities**	ELEVATION:	**921**
		DATE DRILLED:	**February 14, 2002**
LOR GEOTECHNICAL GROUP INC.		EQUIPMENT:	**CME 55**
		HOLE DIA.: **8"**	ENCLOSURE: **B-18**

LOG OF BORING B-19

DEPTH IN FEET	EQUIVALENT SPT BLOW COUNTS		MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S	DESCRIPTION
	TEST DATA								
0			5.0					SM	FILL: SILTY SAND, approximately 10% very fine gravel, 10% medium grained sand, 45% fine grained sand, 35% silty fines, brown, loose, damp.
	15		5.7		108.7				
5	17		3.4		112.1			SM	@ 4 feet ALLUVIUM: SILTY SAND with gravel, approximately 20% gravel to 1 inch, 10% coarse grained sand, 15% medium grained sand, 30% fine grained sand, 25% silty fines, brown, damp.
10	33		4.1		120.3				
15	25		4.8		118.9				
20	56		3.4		124.8				
25	46		3.5		127.6				
30									END OF BORING Fill 0-4' No caving No groundwater No bedrock
35									

PROJECT: 500+ Acres in Bedford Canyon, Corona, CA		PROJECT NUMBER:	31558.1
CLIENT:	Bluestone Communities	ELEVATION:	892
		DATE DRILLED:	February 14, 2002
LOR GEOTECHNICAL GROUP INC.		EQUIPMENT:	CME 55
		HOLE DIA.: 8"	ENCLOSURE: B-19

LOG OF TRENCH T-1

DEPTH IN FEET	ESTIMATED COMPACTION (%)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S	DESCRIPTION
0		6.0				SM	FILL: SILTY SAND, approximately 5% gravel to 1/2", 10% coarse grained sand, 30% medium grained sand, 30% fine grained sand, 25% silty fines, dark brown, moist, loose.
	81	12.6	106.6			SM	@ 1 foot ALLUVIUM: SILTY SAND, trace gravel to 1/2", approximately 5% coarse grained sand, 10% medium grained sand, 50% fine grained sand, 35% silty fines, dark brown, moist, roots.
	85	4.8	111.6				@ 3 feet approximately 20% gravel to 1", 20% coarse grained sand, 20% medium grained sand, 25% fine grained sand, 15% silty fines, dark brown, moist.
							@ 3.5 feet trace cobbles to 10".
5						ML	@ 5 feet SANDY SILT, trace gravel to 1", trace coarse grained sand, approximately 5% medium grained sand, 40% fine grained sand, 55% silty fines with trace clay of low plasticity, dark brown, moist.
10							@ 11 feet occasional cobble to 5".
						SM	@ 13 feet SILTY SAND, approximately 20% gravel to 2", 20% coarse grained sand, 30% medium grained sand, 10% fine grained sand, 20% silty fines, red brown, moist.
15							END OF TRENCH
							Fill 0-1'
							No caving
							No groundwater
							No bedrock

TEST DATA

PROJECT: 500+ Acres in Bedford Canyon, Corona, CA		PROJECT NUMBER:	31558.1
CLIENT: Bluestone Communities		ELEVATION:	916
		DATE EXCAVATED:	February 4, 2002
LOR GEOTECHNICAL GROUP INC.		EQUIPMENT:	Ford 555E
		BUCKET W.: 24"	ENCLOSURE: B-24

LOG OF TRENCH T-2

DEPTH IN FEET	ESTIMATED COMPACTION (%)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	U.S.C.S	DESCRIPTION
0		4.4		SM	FILL: **SILTY SAND with gravel, approximately 10% gravel to 1", 10% coarse grained sand, 15% medium grained sand, 35% fine grained sand, 30% silty fines, brown, moist, loose.**
				SW	**@ 1 foot ALLUVIUM: WELL GRADED SAND with gravel, approximately 15% gravel to 6", 20% coarse grained sand, 30% medium grained sand, 5% silty fines, brown, moist.**
	89	3.3	116.1		
5	84	5.8	109.7		**@ 4 feet approximately 5% gravel to 1", 35% coarse grained sand, 35% medium grained sand, 20% fine grained sand, 55% silty fines, brown, moist.** **@ 5 feet occasional cobble to 10".**
10					
15					**END OF TRENCH**

Fill 0-1'
No caving
No groundwater
No bedrock

PROJECT:	**500+ Acres in Bedford Canyon, Corona, CA**	PROJECT NUMBER:	**31558.1**
CLIENT:	**Bluestone Communities**	ELEVATION:	**914**
		DATE EXCAVATED:	**February 4, 2002**
LOR GEOTECHNICAL GROUP INC.		EQUIPMENT:	**Ford 555E**
		BUCKET W.: **24"**	ENCLOSURE: **B-25**

LOG OF TRENCH T-3

DEPTH IN FEET	ESTIMATED COMPACTION (%)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	U.S.C.S	DESCRIPTION
0		18.3		SM	FILL: **SILTY SAND with trace clay, approximately 5% coarse grained sand, 15% medium grained sand, 45% fine grained sand, 35% silty fines with trace clay of low plasticity, brown, moist, loose.**
	80	10.7	104.8	SW	**@ 1.5 feet** ALLUVIUM: **WELL GRADED SAND with silt, approximately 10% gravel to 1", 30% coarse grained sand, 35% medium grained sand, 20% fine grained sand, 10% silty fines, brown, moist.**
	90	4.9	118.7		
5					**@ 5 feet occasional cobble to 10".**
					@ 7 feet approximately 30% gravel to 10", 25% coarse grained sand, 25% medium grained sand, 20% fine grained sand, 5% silty fines, brown, moist.
10					
15					**END OF TRENCH**
					Fill 0-1.5' **No caving** **No groundwater** **No bedrock**

PROJECT:	**500+ Acres in Bedford Canyon, Corona, CA**	PROJECT NUMBER:	**31558.1**
CLIENT:	**Bluestone Communities**	ELEVATION:	**896**
		DATE EXCAVATED:	**February 4, 2002**
LOR GEOTECHNICAL GROUP INC.		EQUIPMENT:	**Ford 555E**
		BUCKET W.: **24"**	ENCLOSURE: **B-26**

Appendix C
Laboratory Summary from Phase 1 Grading

APPENDIX C

Laboratory Test Results

The laboratory testing program was directed towards providing quantitative data relating to the relevant engineering properties of the site soils. Samples considered representative of site conditions were tested in general accordance with American Society for Testing and Materials (ASTM) procedure and/or California Test Methods (CTM), where applicable. The following summary is a brief outline of the test type and a table summarizing the test results.

Laboratory Compaction: The maximum dry density and optimum moisture content of typical materials were determined in accordance with ASTM D1557. The results of these tests are presented in the table below.

No.	Description	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
1	Red-Brown Silty, Clayey Sand w/ Gravel	137.0	7.5
2	Red-Brown Silty, Clayey Sand w/ Gravel	134.5	7.5
3	Dark Brown Silty Gravel w/ Sand	152.5	3.5
4	Brown Silty Sand w/ Gravel	133.5	8.0
5	Dark Brown Silty, Clayey Sand w/ Gravel	140.0	6.0
6	Dark Brown Clayey Sand w/ Gravel	142.0	6.0
8A	Gravelly Sand (30% Rock)	144.0	6.0
8B	Gravelly Sand (35% Rock)	146.0	5.0
8C	Gravelly Sand (40% Rock)	147.0	5.0
8D	Gravelly Sand (45% Rock)	149.0	5.0

Expansion Index: The expansion potential of selected samples was evaluated by the Expansion Index Test, Standard ASTM D4829. Specimens are molded under a given compactive energy to approximately the optimum moisture content and approximately 50 percent saturation or approximately 90 percent relative compaction. The prepared 1-inch-thick by 4-inch-diameter specimens are loaded to an equivalent 144 psf surcharge and are inundated with tap water until volumetric equilibrium is reached. The results of these tests are presented in the table below.

Sample Location	Sample Number	Expansion Index	Expansion Potential*
Near "A" Street	EI-1	58	Medium
Central Fill	EI-2	1	Very Low
Near "C" Street	EI-3	7	Very Low
Central Fill	EI-4	0	Very Low
Central Fill	EI-5	8	Very Low

* ASTM D4829

Appendix D
General Earthwork and Grading Specifications for Rough Grading

General Earthwork and Grading Specifications for Rough Grading

1.0 General

1.1 Intent

These General Earthwork and Grading Specifications are for the grading and earthwork shown on the approved grading plan(s) and/or indicated in the geotechnical report(s). These Specifications are a part of the recommendations contained in the geotechnical report(s). In case of conflict, the specific recommendations in the geotechnical report shall supersede these more general Specifications. Observations of the earthwork by the project Geotechnical Consultant during the course of grading may result in new or revised recommendations that could supersede these specifications or the recommendations in the geotechnical report(s).

1.2 The Geotechnical Consultant of Record

Prior to commencement of work, the owner shall employ a qualified Geotechnical Consultant of Record (Geotechnical Consultant). The Geotechnical Consultant shall be responsible for reviewing the approved geotechnical report(s) and accepting the adequacy of the preliminary geotechnical findings, conclusions, and recommendations prior to the commencement of the grading.

Prior to commencement of grading, the Geotechnical Consultant shall review the "work plan" prepared by the Earthwork Contractor (Contractor) and schedule sufficient personnel to perform the appropriate level of observation, mapping, and compaction testing.

During the grading and earthwork operations, the Geotechnical Consultant shall observe, map, and document the subsurface exposures to verify the geotechnical design assumptions. If the observed conditions are found to be significantly different than the interpreted assumptions during the design phase, the Geotechnical Consultant shall inform the owner, recommend appropriate changes in design to accommodate the observed conditions, and notify the review agency where required.

The Geotechnical Consultant shall observe the moisture-conditioning and processing of the subgrade and fill materials and perform relative compaction testing of fill to confirm that the attained level of compaction is being accomplished as specified. The Geotechnical Consultant shall provide the test results to the owner and the Contractor on a routine and frequent basis.

1.3 The Earthwork Contractor

The Earthwork Contractor (Contractor) shall be qualified, experienced, and knowledgeable in earthwork logistics, preparation and processing of ground to receive fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall review and accept the plans, geotechnical report(s), and these Specifications prior to commencement of grading. The Contractor shall be solely responsible for performing the grading in accordance with the project plans and specifications. The Contractor shall prepare and submit to the owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of “equipment” of work and the estimated quantities of daily earthwork

contemplated for the site prior to commencement of grading. The Contractor shall inform the owner and the
Geotechnical Consultant of changes in work schedules and updates to the work plan at least 24 hours in advance of such changes so that appropriate personnel will be available for observation and testing. The Contractor shall not assume that the Geotechnical Consultant is aware of all grading operations.

The Contractor shall have the sole responsibility to provide adequate equipment and methods to accomplish the earthwork in accordance with the applicable grading codes and agency ordinances, these Specifications, and the recommendations in the approved geotechnical report(s) and grading plan(s). If, in the opinion of the Geotechnical Consultant, unsatisfactory conditions, such as unsuitable soil, improper moisture condition, inadequate compaction, insufficient buttress key size, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the Geotechnical Consultant shall reject the work and may recommend to the owner that construction be stopped until the conditions are rectified. It is the contractor's sole responsibility to provide proper fill compaction.

2.0 Preparation of Areas to be Filled

2.1 Clearing and Grubbing

Vegetation, such as brush, grass, roots, and other deleterious material shall be sufficiently removed and properly disposed of in a method acceptable to the owner, governing agencies, and the Geotechnical Consultant.

The Geotechnical Consultant shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 1 percent of organic materials (by volume). Nesting of the organic materials shall not be allowed.

If potentially hazardous materials are encountered, the Contractor shall stop work in the affected area, and a hazardous material specialist shall be informed immediately for proper evaluation and handling of these materials prior to continuing to work in that area.

As presently defined by the State of California, most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) have chemical constituents that are considered to be hazardous waste. As such, the indiscriminate dumping or spillage of these fluids onto the ground may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall not be allowed. The contractor is responsible for all hazardous waste relating to his work. The Geotechnical Consultant does not have expertise in this area. If hazardous waste is a concern, then the Client should acquire the services of a qualified environmental assessor.

2.2 Processing

Existing ground that has been declared satisfactory for support of fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Existing ground that is not satisfactory shall be over-excavated as specified in the following section. Scarification shall continue until soils are broken down and free of oversize material and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction.

2.3 Over-excavation

In addition to removals and over-excavations recommended in the approved geotechnical report(s) and the grading plan, soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be over-excavated to competent ground as evaluated by the Geotechnical Consultant during grading.

2.4 Benching

Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. Please see the Standard Details for a graphic illustration. The lowest bench or key shall be a minimum of 15 feet wide and at least 2 feet deep, into competent material as evaluated by the Geotechnical Consultant. Other benches shall be excavated a minimum height of 4 feet into competent material or as otherwise recommended by the Geotechnical Consultant. Fill placed on ground sloping flatter than 5:1 shall also be benched or otherwise over-excavated to provide a flat subgrade for the fill.

2.5 Evaluation/Acceptance of Fill Areas

All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive fill. The Contractor shall obtain a written acceptance from the Geotechnical Consultant prior to fill placement. A licensed surveyor shall provide the survey control for determining elevations of processed areas, keys, and benches.

3.0 Fill Material

3.1 General

Material to be used as fill shall be essentially free of organic matter and other deleterious substances evaluated and accepted by the Geotechnical Consultant prior to placement. Soils of poor quality, such as those with unacceptable gradation, high expansion potential, or low strength shall be placed in areas acceptable to the Geotechnical Consultant or mixed with other soils to achieve satisfactory fill material.

3.2 Oversize

Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 8 inches, shall not be buried or placed in fill unless location, materials, and placement methods are specifically accepted by the Geotechnical Consultant. Placement operations shall be such that nesting of oversized material does not occur and such that oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 vertical feet of finish grade or within 2 feet of future utilities or underground construction.

3.3 Import

If importing of fill material is required for grading, proposed import material shall meet the requirements of the geotechnical consultant. The potential import source shall be given to the Geotechnical Consultant at least 48 hours (2 working days) before importing begins so that its suitability can be determined and appropriate tests performed.

4.0 Fill Placement and Compaction

4.1 Fill Layers

Approved fill material shall be placed in areas prepared to receive fill (per Section 3.0) in near-horizontal layers not exceeding 8 inches in loose thickness. The Geotechnical Consultant may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.

4.2 Fill Moisture Conditioning

Fill soils shall be watered, dried back, blended, and/or mixed, as necessary to attain a relatively uniform moisture content at or slightly over optimum. Maximum density and optimum soil moisture content tests shall be performed in accordance with the American Society of Testing and Materials (ASTM Test Method D1557).

4.3 Compaction of Fill

After each layer has been moisture-conditioned, mixed, and evenly spread, it shall be uniformly compacted to not less than 90 percent of maximum dry density (ASTM Test Method D1557). Compaction equipment shall be adequately sized and be either specifically designed for soil compaction or of proven reliability to efficiently achieve the specified level of compaction with uniformity.

4.4 Compaction of Fill Slopes

In addition to normal compaction procedures specified above, compaction of slopes shall be accomplished by backrolling of slopes with sheepsfoot rollers at increments of 3 to 4 feet in fill elevation, or by other methods producing satisfactory results acceptable to the Geotechnical Consultant. Upon completion of grading, relative compaction of the fill, out to the slope face, shall be at least 90 percent of maximum density per ASTM Test Method D1557.

4.5 Compaction Testing

Field tests for moisture content and relative compaction of the fill soils shall be performed by the Geotechnical Consultant. Location and frequency of tests shall be at the Consultant's discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to inadequate compaction (such as close to slope faces and at the fill/bedrock benches).

4.6 Frequency of Compaction Testing

Tests shall be taken at intervals not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of compacted fill soils embankment. In addition, as a guideline, at least one test shall be taken on slope faces for each 5,000 square feet of slope face and/or each 10 feet of vertical height of slope. The Contractor shall assure that fill construction is such that the testing schedule can be accomplished by the Geotechnical Consultant. The Contractor shall stop or slow down the earthwork construction if these minimum standards are not met.

4.7 Compaction Test Locations

The Geotechnical Consultant shall document the approximate elevation and horizontal coordinates of each test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established so that the Geotechnical Consultant can determine the test locations with sufficient accuracy. At a minimum, two grade stakes within a horizontal distance of 100 feet and vertically less than
5 feet apart from potential test locations shall be provided.

5.0 Subdrain Installation

Subdrain systems shall be installed in accordance with the approved geotechnical report(s), the grading plan, and the Standard Details. The Geotechnical Consultant may recommend additional subdrains and/or changes in subdrain extent, location, grade, or material depending on conditions encountered during grading. All subdrains shall be surveyed by a land surveyor/civil engineer for line and grade after installation and prior to burial. Sufficient time should be allowed by the Contractor for these surveys.

6.0 Excavation

Excavations, as well as over-excavation for remedial purposes, shall be evaluated by the Geotechnical Consultant during grading. Remedial removal depths shown on geotechnical plans are estimates only. The actual extent of removal shall be determined by the Geotechnical Consultant based on the field evaluation of exposed conditions during grading. Where fill-over-cut slopes are to be graded, the cut portion of the slope shall be made, evaluated, and accepted by the Geotechnical Consultant prior to placement of materials for construction of the fill portion of the slope, unless otherwise recommended by the Geotechnical Consultant.

7.0 Trench Backfills

7.1 The Contractor shall follow all OHSA and Cal/OSHA requirements for safety of trench excavations.

7.2 All bedding and backfill of utility trenches shall be done in accordance with the applicable provisions of Standard Specifications of Public Works Construction. Bedding material shall have a Sand Equivalent greater than 30 (SE>30). The bedding shall be placed to 1 foot over

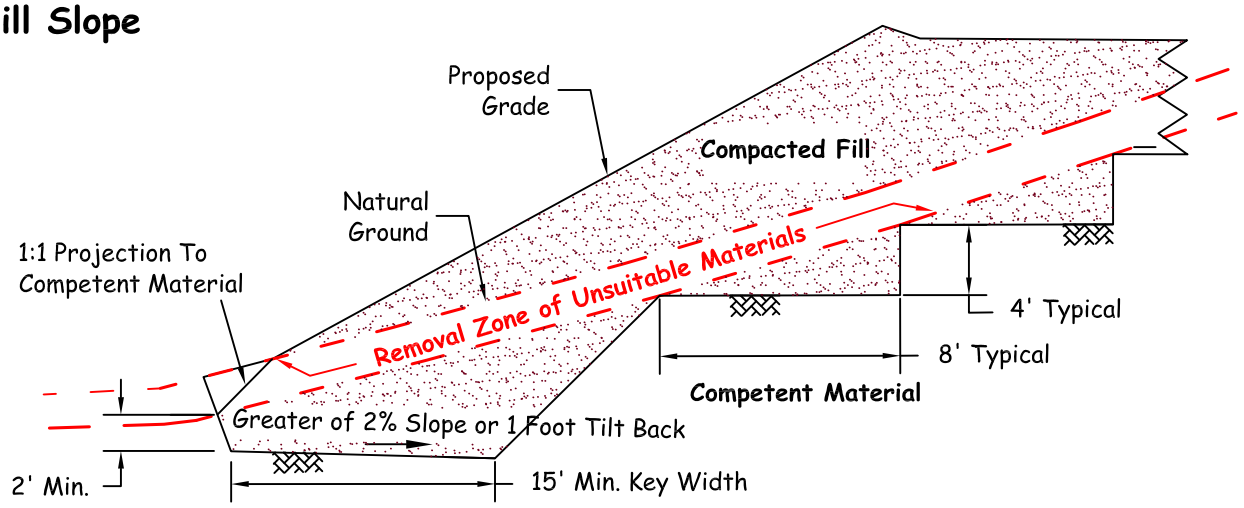
the top of the conduit and densified by jetting. Backfill shall be placed and densified to a minimum of 90 percent of maximum from 1 foot above the top of the conduit to the surface.

7.3 The jetting of the bedding around the conduits shall be observed by the Geotechnical Consultant.

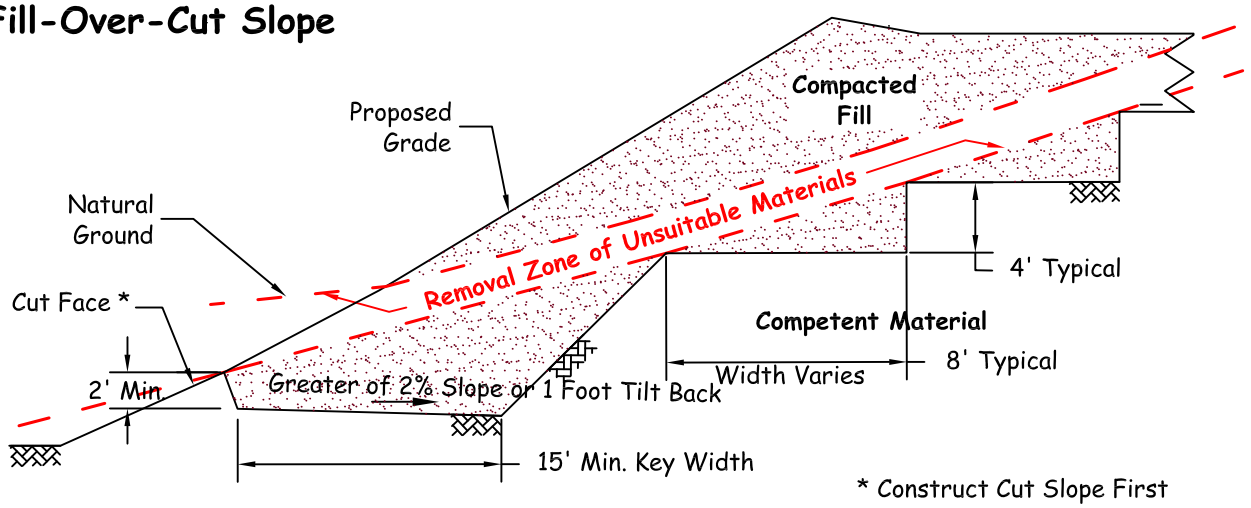
7.4 The Geotechnical Consultant shall test the trench backfill for relative compaction. At least one test should be made for every 300 feet of trench and 2 feet of fill.

7.5 Lift thickness of trench backfill shall not exceed those allowed in the Standard Specifications of Public Works Construction unless the Contractor can demonstrate to the Geotechnical Consultant that the fill lift can be compacted to the minimum relative compaction by his alternative equipment and method.

Fill Slope

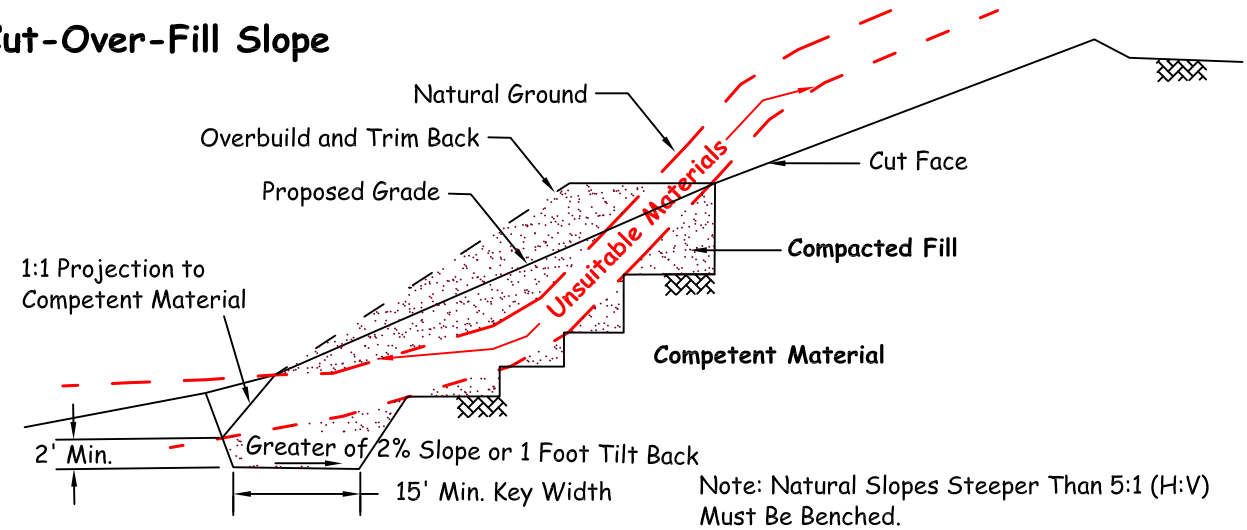


Fill-Over-Cut Slope



* Construct Cut Slope First

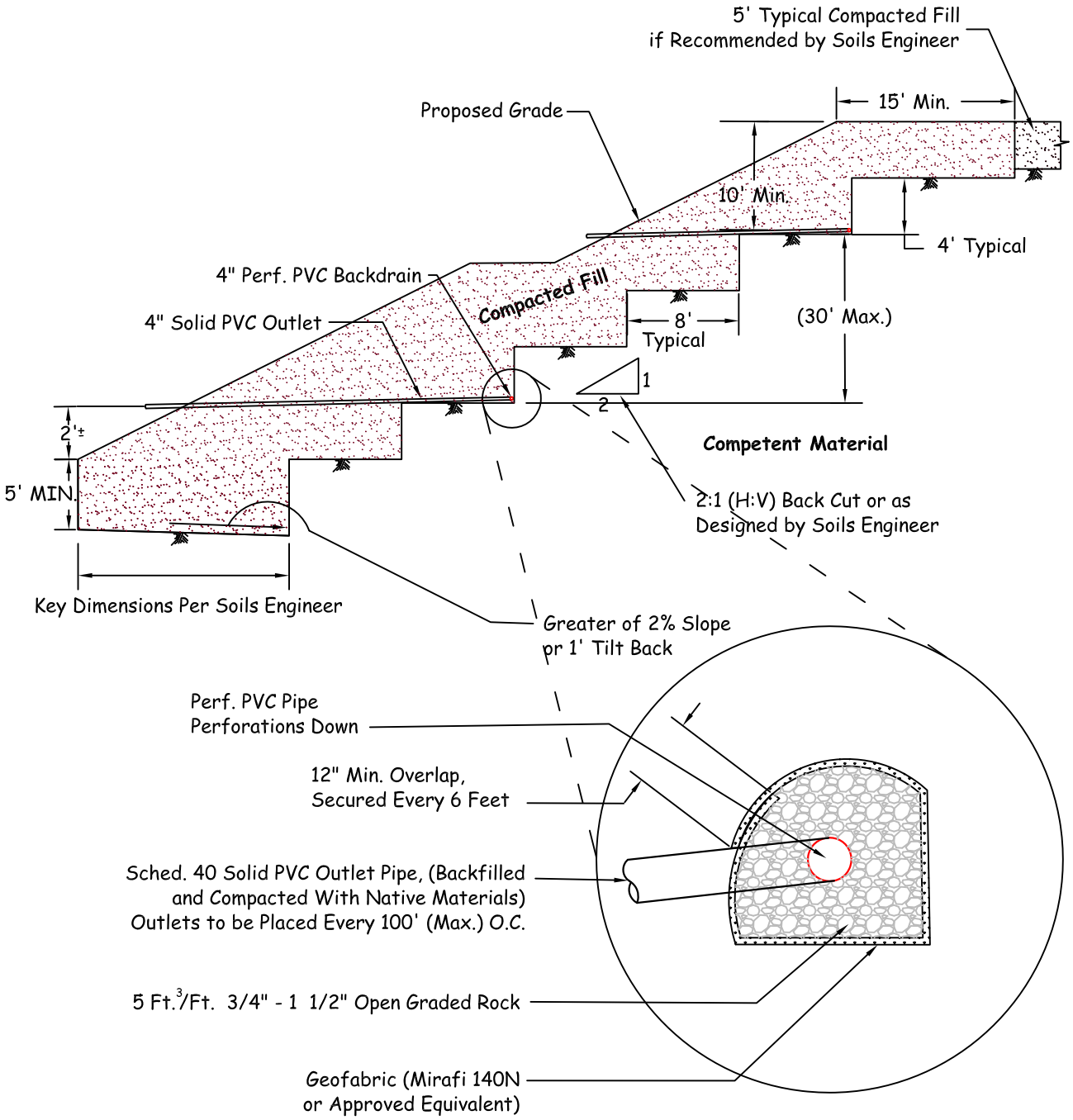
Cut-Over-Fill Slope



Note: Natural Slopes Steeper Than 5:1 (H:V) Must Be Benched.

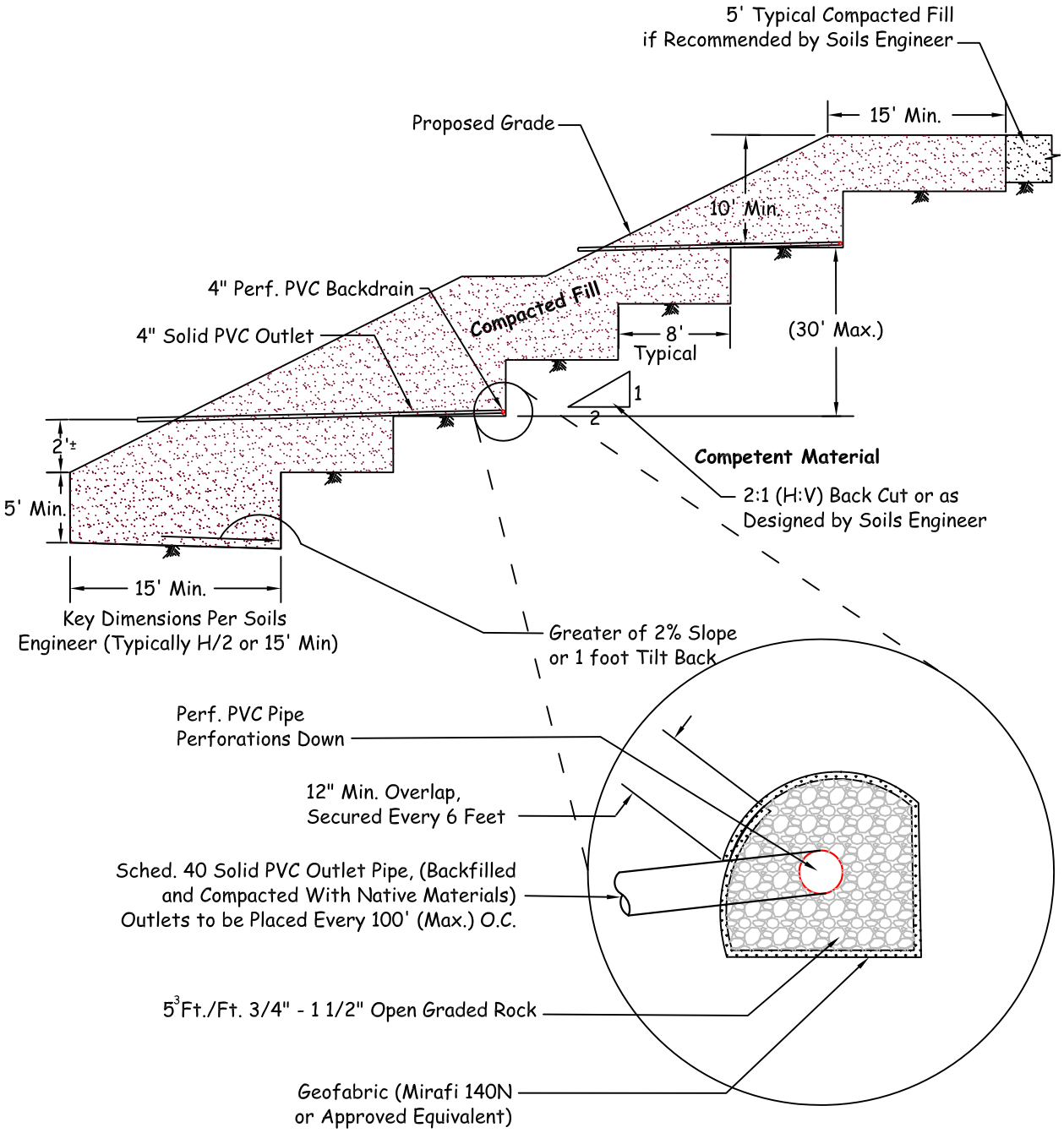
LGC Geotechnical, Inc.

KEYING AND BENCHING



LGC Geotechnical, Inc.

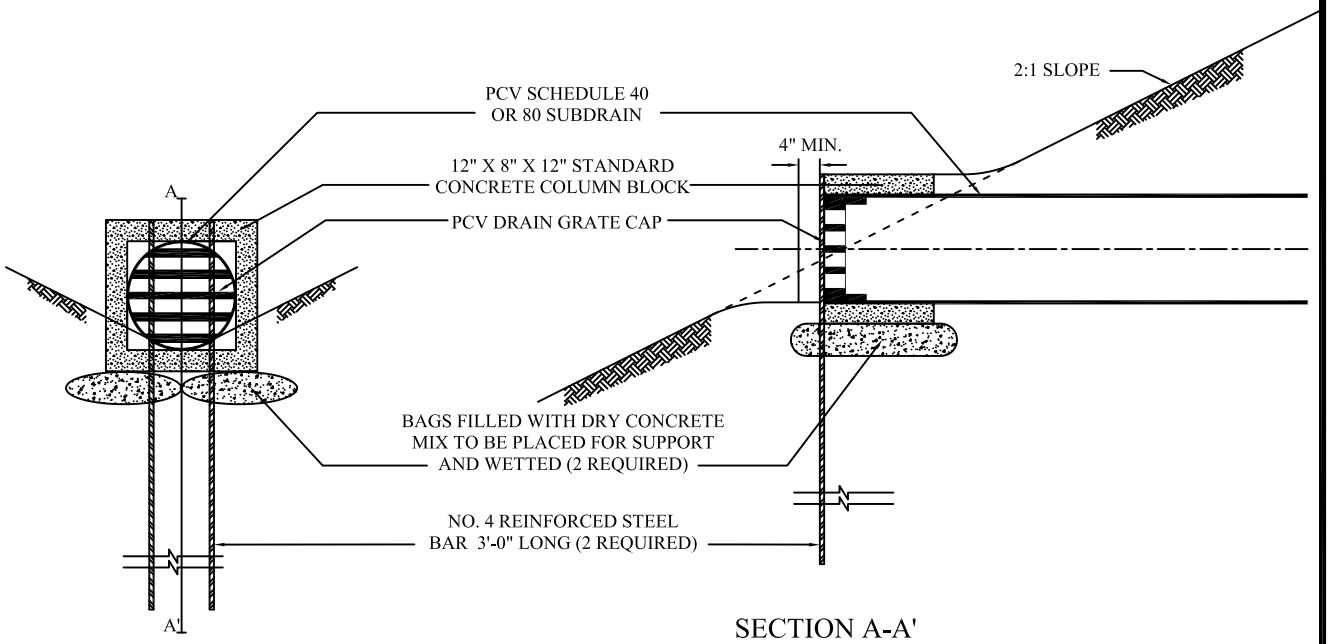
TYPICAL BUTTRESS DETAIL



LGC Geotechnical, Inc.

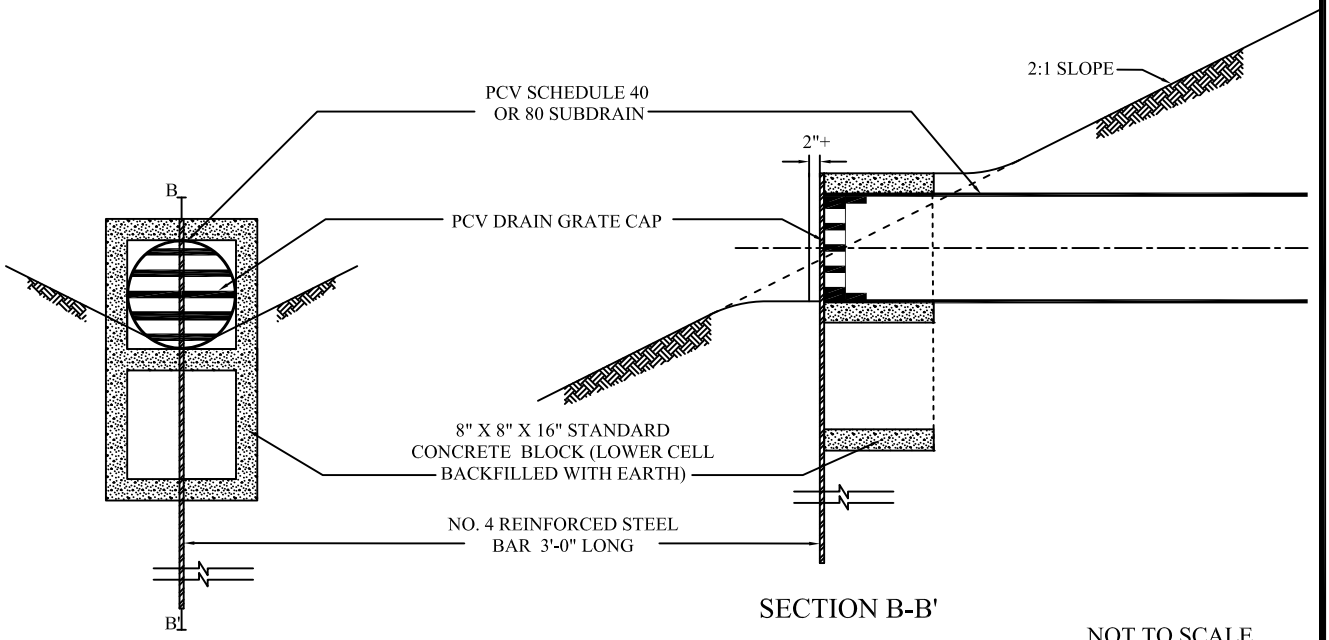
TYPICAL STABILIZATION FILL DETAIL

SUBDRAIN OUTLET MARKER -6" & 8" PIPE



SECTION A-A'

SUBDRAIN OUTLET MARKER -4" PIPE



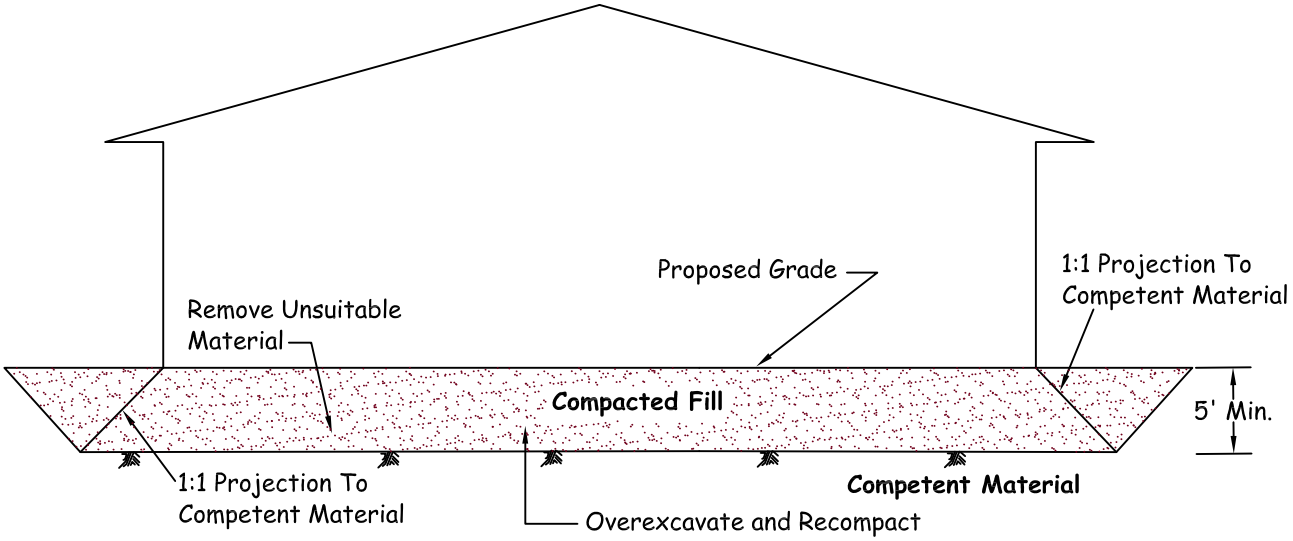
SECTION B-B'

NOT TO SCALE

LGC Geotechnical, Inc.

SUBDRAIN OUTLET MARKER DETAIL

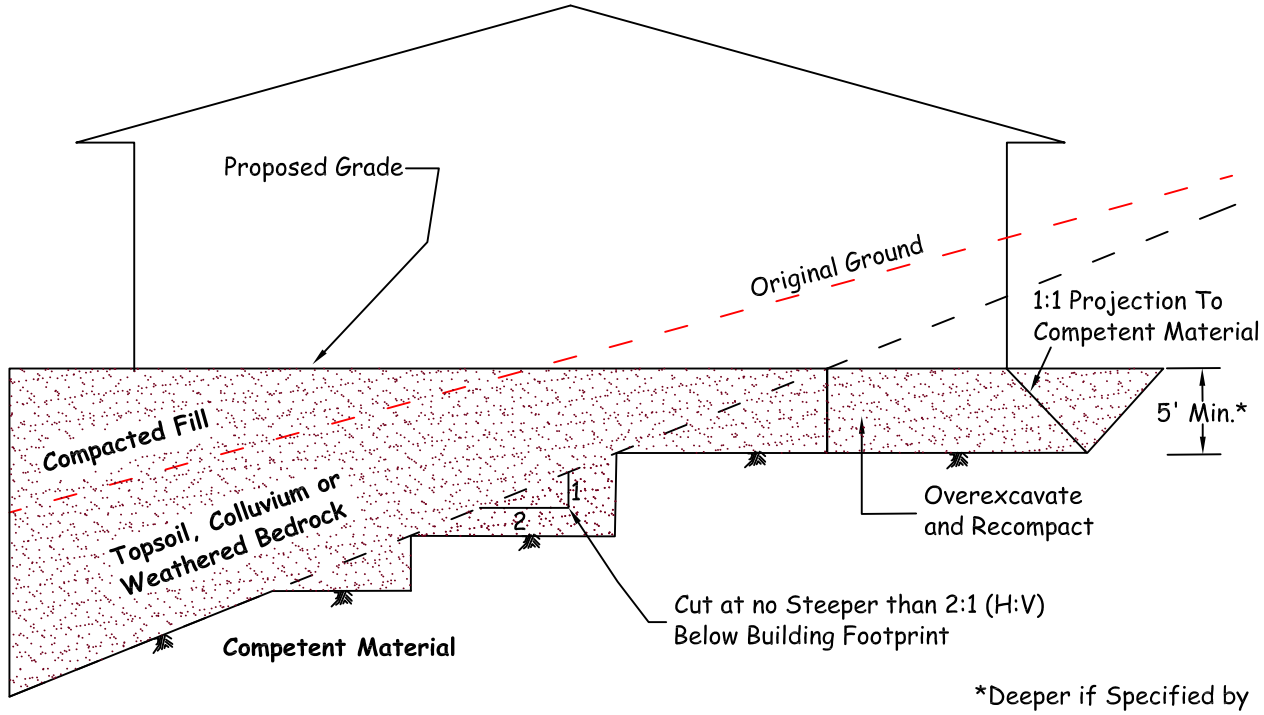
Cut Lot
(Exposing Unsuitable Soils at Design Grade)



Note 1: Removal Bottom Should be Graded With Minimum 2% Fall Towards Street or Other Suitable Area (as Determined by Soils Engineer) to Avoid Ponding Below Building

Note 2: Where Design Cut Lots are Excavated Entirely Into Competent Material, Overexcavation May Still be Required for Hard-Rock Conditions or for Materials With Variable Expansion Characteristics.

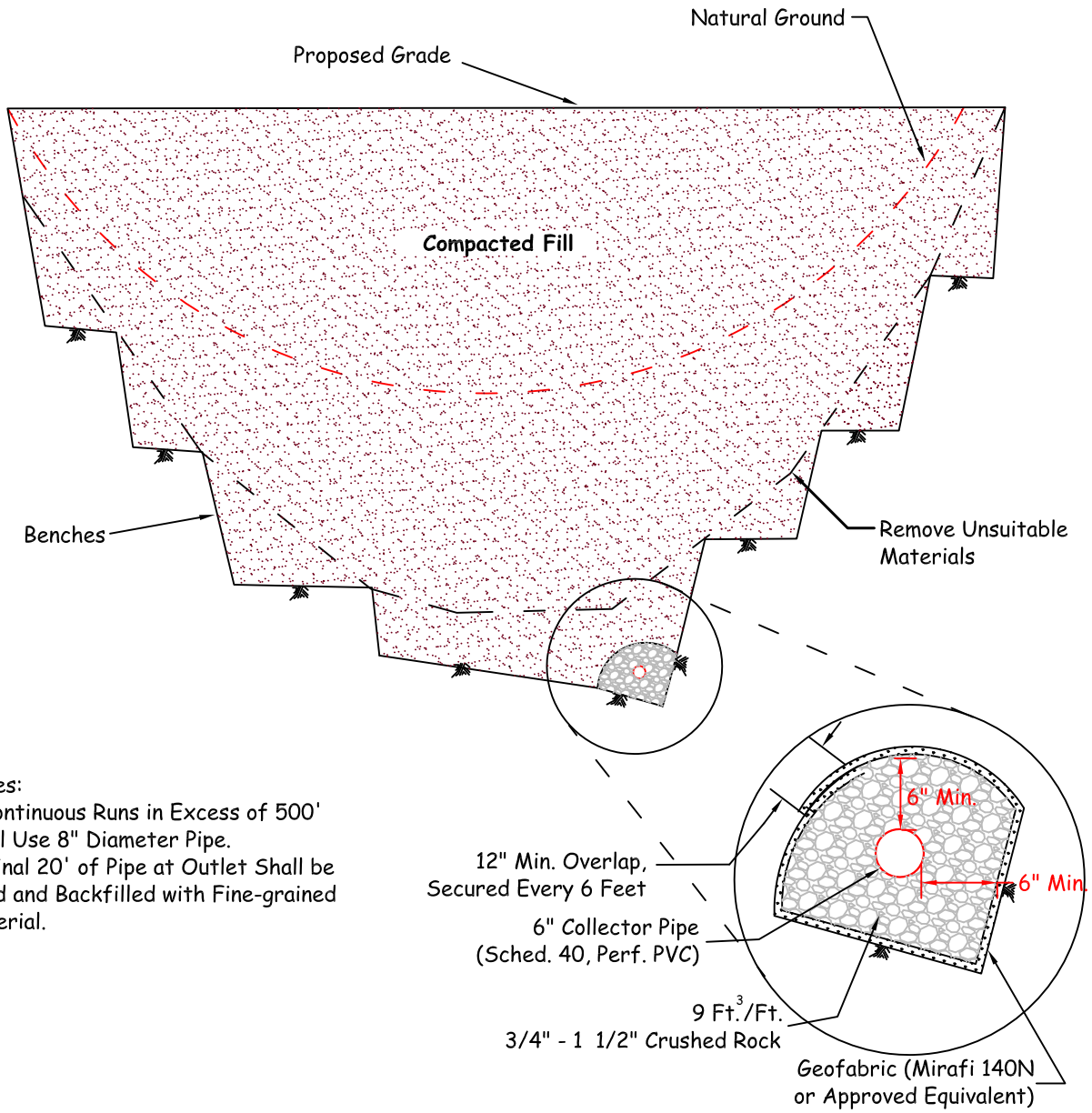
Cut/Fill Transition Lot



*Deeper if Specified by Soils Engineer

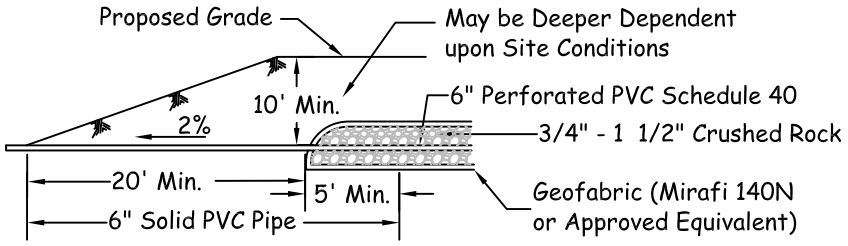
LGC Geotechnical, Inc.

CUT AND TRANSITION LOT OVEREXCAVATION DETAIL



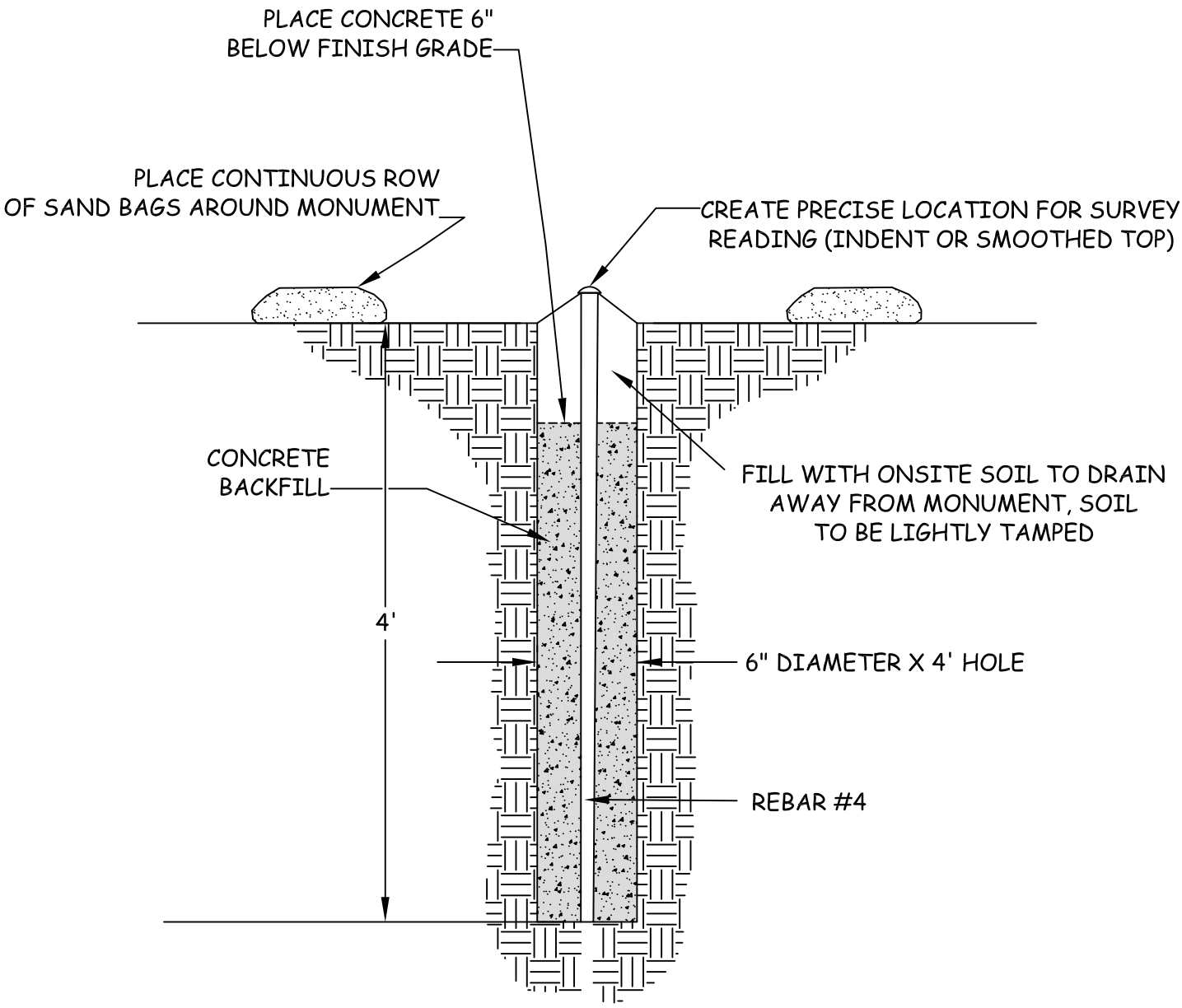
Notes:
1) Continuous Runs in Excess of 500' Shall Use 8" Diameter Pipe.
2) Final 20' of Pipe at Outlet Shall be Solid and Backfilled with Fine-grained Material.

Proposed Outlet Detail



LGC Geotechnical, Inc.

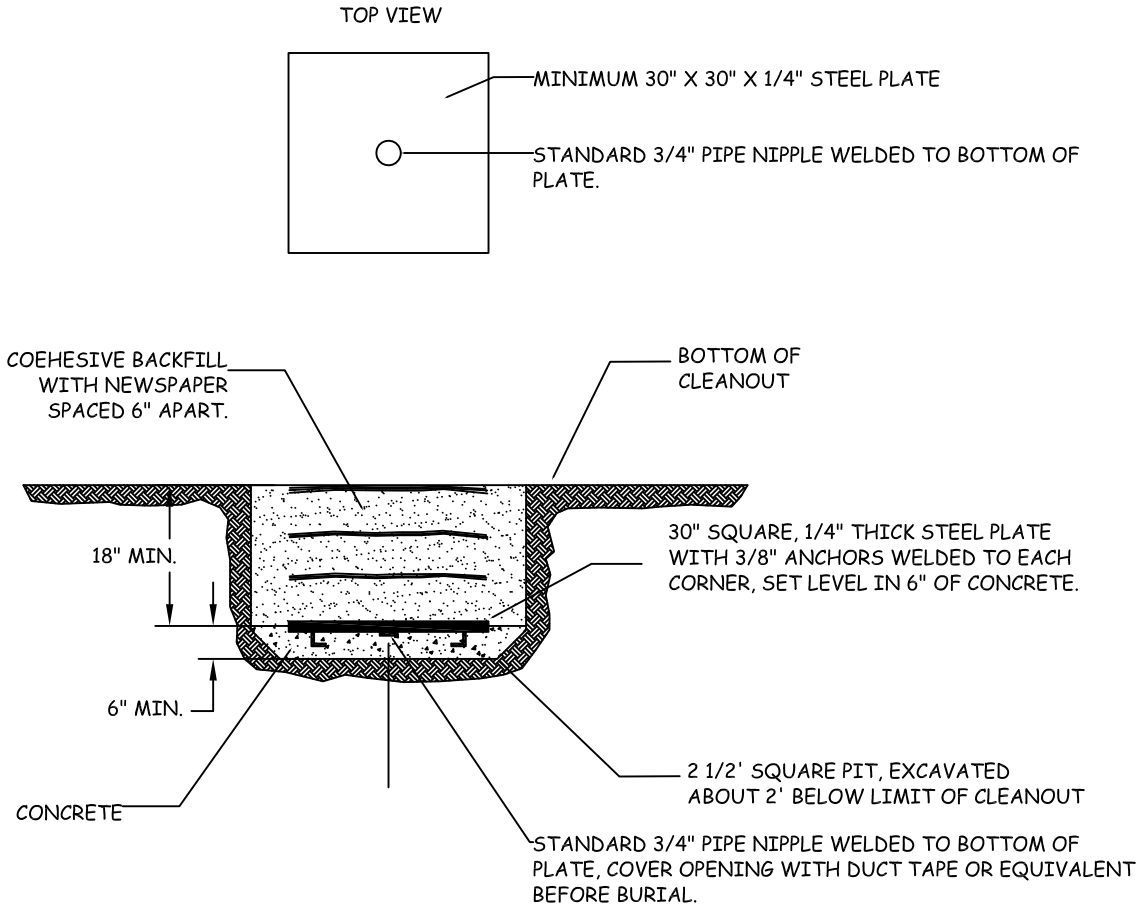
CANYON SUBDRAINS



NO CONSTRUCTION EQUIPMENT WITHIN 25 FEET
OF ANY INSTALLED SETTLEMENT MONUMENTS

LGC Geotechnical, Inc.

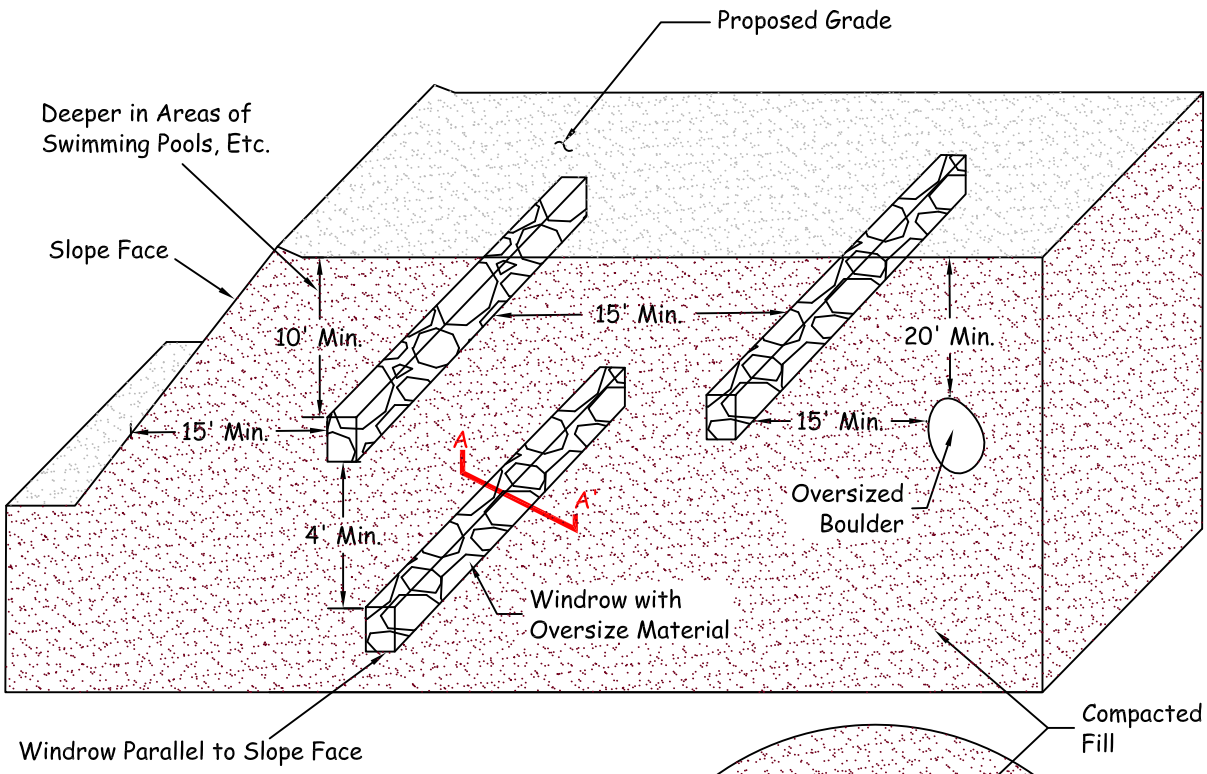
TYPICAL SURFACE SETTLEMENT MONUMENT

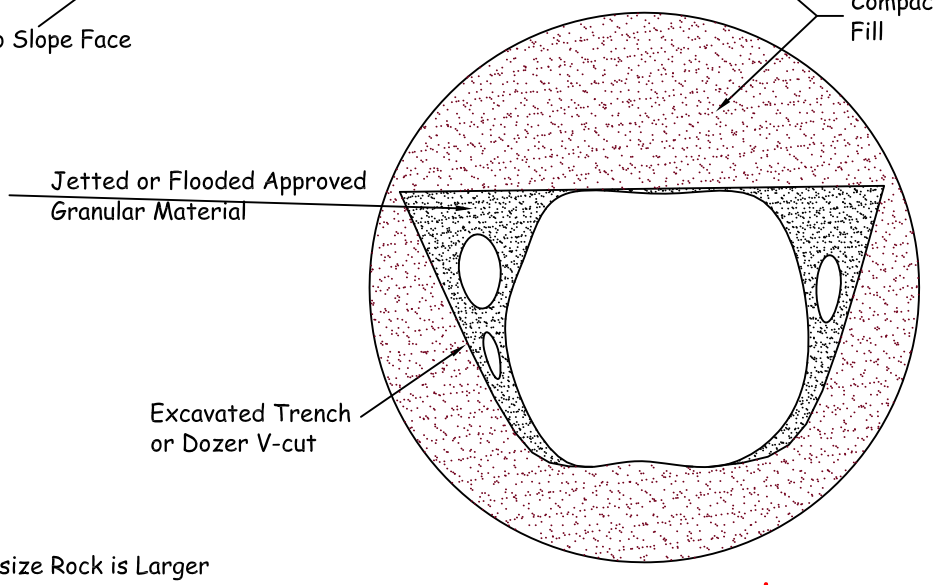


1. SURVEY FOR HORIZONTAL AND VERTICAL LOCATION TO NEAREST .01 INCH PRIOR TO BACKFILL USING KNOW LOCATIONS THAT WILL REMAIN INTACT DURING THE DURATION OF THE MONITORING PROGRAM. KNOW POINTS EXPLICITELY NOT ALLOWED ARE THOSE LOCATED ON FILL OR THAT WILL BE DESTROYED DURING GRADING.
2. IN THE EVENT OF DAMAGE TO SETTLEMENT PLATE DURING GRADING, CONTRACTOR SHALL IMMEDIATELY NOTIFY THE GEOTECHNICAL ENGINEER AND SHALL BE RESPONSIBLE FOR RESTORING THE SETTLEMENT PLATES TO WORKING ORDER.
3. DRILL TO RECOVER AND ATTACH RISER PIPE.

LGC Geotechnical, Inc.

TYPICAL SETTLEMENT PLATE AND RISER





Note: Oversize Rock is Larger
than 8" in Maximum Dimension.

Section A-A'

LGC Geotechnical, Inc.

OVERSIZE ROCK DISPOSAL DETAIL

LEGEND:

Af	Artificial Fill Placed During Phase 1 Rough Grading
Qal	Quaternary Alluvial Deposits, Circled Where Buried
5	Estimated Removal Depths
LOR-B-19 ⊗ T.D. = 30'	Approximate Location of Boring by Others with Total Depth in Feet (LOR, 2002)
LOR-T-3	Approximate Location of Exploratory Trench by Others (LOR, 2002)
I-2A ▢ T.D. = 5'	Approximate Location of Intiltration Test (LGC Geotechnical, 2015)
I-3(B) ■	Approximate Location of Excavation for Infiltration Testing (LGC Geotechnical, 2016)
	Approximate Geologic Contact
	Approximate Limits of Bedford Market Place

Phase 1 Grading (Completed)

Partial Grading Completed

No Grading Completed

Phase 1 Grading (Completed)

Phase 1 Grading (Completed)

EAGLE GLEN PARKWAY / CAJALCO ROAD

'H' STREET

'C' STREET

BEDFORD CANYON RD

INTERSTATE 15

PRACEL MAP 30156 PARCEL 5

LOT 8 TRACT 36294

LOT 37 TRACT 36294

LOT 38 TRACT 36294

LOT 39 TRACT 36294

LOT 9

LOT 10

LOT "A"

LOT "B"

LOT "N"

LOR-T-1

LOR-B-18 T.D. = 23'

LOR-B-1 T.D. = 22'

LOR-T-2

LOR-B-19 T.D. = 30'

LOR-T-3

I-1A T.D. = 9'

I-1(B) & I-2B

I-2A T.D. = 8'

I-3(B)

PAD A ±3,600 SF

PAD B ±4,000 SF

PAD C ±2,200 SF

PAD D ±3,600 SF

PAD E ±5,000 SF

PAD F ±5,826 SF

PAD G ±5,290 SF

REST. A (RESTAURANT) ±7,705 SF

MAJOR A LEVEL 1 = 24,460 SF LEVEL 2 = 13,540 SF TOTAL FLOOR AREA = 38,000 SF

MAJOR B ±5,000 SF

SHOPS 2 ±4,875 SF

MAJOR C ±11,125 SF

REST. B ±5,500 SF

5 STORY HOTEL 135 ROOMS LAND AREA 3.3 AC. ±144,099 SF BUILDING AREA ±86,753 SF FOOTPRINT ±24,804 SF

BASIN TOP: 918 (4.6 AC.) BOTTOM: 905 (3.1 AC.) (2' FREEBOARD) (79,979 CYS)

BASIN TOP: 900.0 BOTTOM: 895.0 (1' FREEBOARD) (1.86 ACFT)

BASIN/LIFT STATION ACCESS

LOT LINE ADJUSTMENT 18-001 INST. # 2018-0137411, RECD 4/10/18

FUTURE SCE SWITCH STATION

LIFT STATION

SCALE: 1"=60'

60' 0 60' 120'

LGC Geotechnical, Inc.
131 Calle Iglesia, Ste. 200
San Clemente, CA 92672
TEL (949) 369-6141 FAX (949) 369-6142

Geotechnical Map
Bedford Market Place

PROJECT NAME	Bedford Market Place
PROJECT NO.	18002-01
ENG. / GEOL.	TJL / KAD
SCALE	1" = 60'
DATE	July 2019

SHEET 1 of 1

This Page Intentionally Left Blank

APPENDIX E-2:

Preliminary Geotechnical Recommendations Mass Grading Plan and Haul Route Study

This Page Intentionally Left Blank

August 30, 2019 Project No. 19080-01

Mr. Glen Powles
Bedford Marketplace, LLC
5780 Fleet Street, Suite 225
Carlsbad, California 92008

Subject: ***Preliminary Geotechnical Recommendations Regarding the Updated Mass Grading Plan and Haul Route Study, Phase 2b, Tract No. 36294, Bedford, Corona, California***

References: Hunsaker & Associates, 2019a, Bedford Ranch, Phase 2b, Mass Grading Plan, Study #1 dated August 16, 2019.

_____ 2019b, Remediated Haul Route Study #1, dated August 27, 2019.

Introduction

In accordance with your request, LGC Geotechnical, Inc. has prepared this letter as a geotechnical review of the referenced Bedford Ranch Mass Grading Plan and Remediated Haul Route Study #1 prepared by Hunsaker & Associates (2019a & 2019b) for Phase 2b, Tract No. 36294, Bedford, located in the City of Corona, California. This letter is intended to provide preliminary geotechnical recommendations relative to the referenced plans.

Summary of Geotechnical Recommendations

Based on our knowledge of the subject site and review of the referenced plans (References), it is our opinion that the proposed improvements are feasible from a geotechnical standpoint, provided that the recommendations contained herein are incorporated during site grading and development. A summary of our preliminary geotechnical recommendations are as follows:

- In order to provide a uniform fill thickness below future building pads, it is recommended that the near surface soils be removed (over-excavated) to a minimum depth of 5 feet below finish pad grades and replaced with compacted fill soils. Please note that this recommendation is provided under the assumption that the depicted grades on the mass grading plan (Hunsaker, 2019a) will be within ±1-foot of ultimate rough grade pad elevations. This recommendation should be confirmed based on proposed ultimate pad rough grades.
- Stabilization fill keyways will be needed for the southern cut slope and haul route remediation. Keyway widths should be a minimum of 15 feet wide. Keyways should be a minimum of 5 feet deep, determined from the lowest toe-of-slope elevation, and tilted back to the heel a minimum of

2 percent or 1-foot, whichever is greater. Stabilization fill backcuts should be excavated so that at least a minimum 15-foot-wide fill width is maintained for the entire height of the stability fill slope. Backcuts should be excavated at a maximum 1.5:1 (horizontal to vertical) inclination or flatter. Properly outlet backdrains should be constructed along stabilization fill backcuts. Approximate locations of stabilization fill keyways are depicted on the Preliminary Geotechnical Map (Sheet 1).

- The proposed slope associated with the haul route remediation is anticipated to be globally stable as designed. However, select grading should be anticipated in order to obtain soils with shear strength parameters required for globally stability (sandy soils with a phi ≥ 32 degrees). Onsite soils anticipated to meet this criterion include the alluvial deposits (Qal) and the old alluvial fan deposits (Qoal). Clayey soils should not be used for slope construction.
- The proposed slope associated with the haul route remediation is anticipated to be surficially stable at inclinations of 2:1 (horizontal to vertical) or flatter. Sections of fill slopes depicted at inclinations of 1.5:1 (horizontal to vertical) will require geogrid reinforcement. See Section C-C' (Sheet 1).
- We recommend that proposed 1.5:1 (horizontal to vertical) fill slopes be constructed with geogrid reinforcement. Beginning approximately at the toe of slope, 8-foot lengths of geogrid reinforcement with a minimum Long-Term Design Strength (LTDS) of 500 lbs/ft (Miragrid 2XT or approved equivalent) should be placed horizontally across the entire width of the 1.5:1 (horizontal to vertical) fill slope. The geogrid reinforcement should be placed every 2 feet vertically and be "day-lighted" to the slope face. Manufacturer's recommendations regarding installation of geogrid should be implemented during construction.
- Based on our review of Section D-D' (Sheet 1), a geotechnical setback from the Caltrans property limit is not necessary. However, setbacks in accordance with the California Building Code (CBC) should be applied by the project civil engineer, where applicable.

Closure

Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable soils engineers and geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report.

Should you have any questions regarding this letter, please do not hesitate to contact our office. We appreciate this opportunity to be of service.

Sincerely,

LGC Geotechnical, Inc.



for

Tim Lawson, GE 2626, CEG 1821
Geotechnical Engineer/Geologist

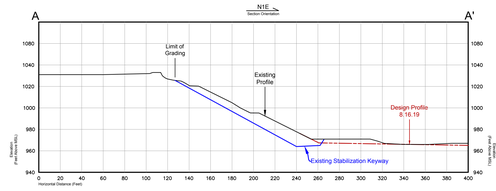


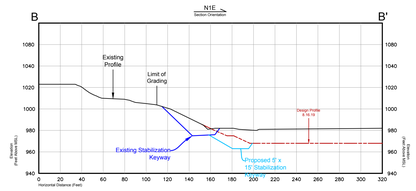
Kevin Dyekman, CEG, 2595
Project Geologist

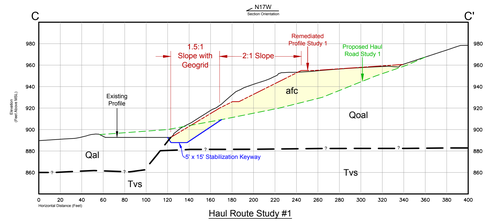
KAD/TJL/amm

Distribution: (1) Addressee (electronic copy)
(1) Hunsaker and Associates (electronic copy)
Attn: Mr. Joe Wightman

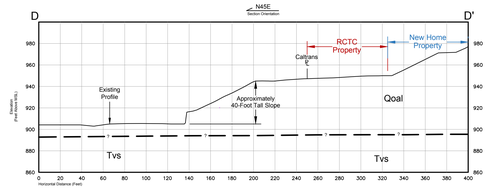
Attachments: Sheet 1 – Preliminary Geotechnical Map







Haul Route Study #1



LGC Geotechnical, Inc.
131 Calle Iglesia, Ste. 200
San Clemente, CA 92672
TEL (949) 369-6141 FAX (949) 369-6142

Preliminary Geotechnical Map

Updated Phase 2b Mass Grade Plan and Haul Route Remediation Study #1

PROJECT NAME	Bedford Marketplace
PROJECT NO.	19080-01
ENG. / GEOL.	TJL / KAD
SCALE	1" = 50'
DATE	August 2019

SHEET 1 of 1

APPENDIX F-1:

Phase I Environmental Site Assessment, Bedford Marketplace - Arantine Hills Tract 8

This Page Intentionally Left Blank

Phase I Environmental Site Assessment

Bedford Marketplace - Arantine Hills Tract 8

Intersections of Eagle Glen Parkway / Cajalco Road / Bedford Canyon Road / I-15
Corona, California

EBI Project No. 1119003602

Report Date: June 10, 2019



Prepared for:

Bedford Marketplace, LLC
5780 Fleet Street, Suite 225
Carlsbad, CA 92008

Prepared by:

EBI Consulting
environmental | engineering | due diligence

EBI Consulting
environmental | engineering | due diligence

21 B Street
Burlington, MA 01803
Tel: (781) 273-2500
Fax: (781) 273-3311
www.ebiconsulting.com

June 10, 2019

Mr. Adam Knowlton
Bedford Marketplace, LLC
5780 Fleet Street, Suite 225
Carlsbad, CA 92008

Subject: **Phase I Environmental Site Assessment, Bedford Marketplace - Arantine Hills Tract 8 Intersections of Eagle Glen Parkway / Cajalco Road / Bedford Canyon Road / I-15, Corona, California**

EBI Project # 1119003602

To Whom It May Concern:

Attached please find *EBI's Phase I Environmental Site Assessment*, (the *Report*) for the above-mentioned asset (the Subject Property). During the property survey and research, *EBI's* property surveyor met with agents representing the Subject Property, or agents of the owner, and reviewed the property and its history. The *Report* was completed according to the terms and conditions authorized by you, the Client. This *Report* has been completed in general conformance with ASTM E 1527–13.

The purpose of this report is to acquire environmental information, observe the general condition and maintenance status of the Subject Property, to suggest remediation and/or maintenance practices considered customary for the Subject Property to continue in its current operation, compared to properties of similar age and condition, and to identify recognized environmental conditions in connection with the Subject Property described in this report.

This *Report* was performed utilizing methods and procedures consistent with established commercial practices and in conformance with industry standards. The suggestions represent *EBI Consulting's* opinion based on written, graphic or verbal information, the property condition and data available to us at the time of the survey. Factual information regarding operations, conditions or data provided by the Client, occupants, owner or their representative has been assumed to be correct and complete.

Reliance on the *Report* and the information contained herein shall mean (i) the *Report* may be relied upon by a lender to be selected by *Bedford Marketplace, LLC,* in determining whether to make a loan evidenced by a note secured by the Property ("the Mortgage Loan"); (ii) the *Report* may be relied upon by any purchaser in determining whether to purchase the Mortgage Loan (but not the Subject Property) from that lender, or an interest in the Mortgage Loan or securities backed or secured by the Mortgage Loan, and any rating agency rating securities representing an interest in the Mortgage Loan or backed or secured by the Mortgage Loan; (iii) the *Report* may be referred to in and included, in whole or in part, with materials offering for sale the Mortgage Loan or an interest in the Mortgage Loan or securities backed or secured by the Mortgage Loan; (iv) the *Report* speaks only as of its date in the absence of a specific written update of the *Report* signed and delivered by *EBI Consulting*.

There are no intended or unintended third party beneficiaries to this report, except as expressly stated herein.

EBI Consulting is an independent contractor, not an employee of either the issuer or the borrower, and its compensation was not based on the findings or recommendations made in the *Report* or on the closing of any business transaction.

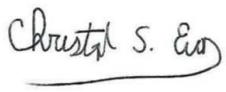
EBI Consulting declares that, to the best of our professional knowledge and belief, *EBI* meets the definition of Environmental Professional as defined in §312.10 of 40 CFR 312 and *EBI* has the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the Subject Property. *EBI Consulting* has developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

EBI Consulting
environmental | engineering | due diligence

21 B Street
Burlington, MA 01803
Tel: (781) 273-2500
Fax: (781) 273-3311
www.ebiconsulting.com

Thank you for the opportunity to prepare this *Report,* and assist you with this project. Please call us if you have any questions or if *EBI Consulting* may be of further assistance.

Respectfully Submitted,
EBI CONSULTING





Christopher Evans
Author / Project Scientist

Michael S. Ryniak
Reviewer / Program Director
mryniak@ebiconsulting.com

928.277.4669 (Arizona Time)

TABLE OF CONTENTS

EXECUTIVE SUMMARY **1**
1.0 INTRODUCTION **3**
1.1 Purpose 3
1.2 Scope-of-Services 3
1.3 Assumptions, Limitations and Exceptions 3
1.4 Special Terms and Conditions 5
1.5 Data Gaps 6
2.0 SUBJECT PROPERTY DESCRIPTION **7**
2.1 Ownership and Location 7
2.2 Subject Property Improvements 7
2.3 Current Use of the Subject Property 7
2.4 Municipal Services & Utilities 7
2.5 Adjoining Properties 7
3.0 USER PROVIDED INFORMATION **9**
3.1 Title Records 9
3.2 Environmental Liens and Activity and Use Limitations 9
3.3 Specialized Knowledge 9
3.4 Commonly Known or Reasonably Ascertainable Information 9
3.5 Valuation Reduction for Environmental Issues 9
3.6 Owner, Property Manager, and Occupant Information 9
3.7 Reason for Performing Phase I ESA 9
4.0 RECORDS REVIEW **10**
4.1 Standard Environmental Records 10
4.1.1 Federal Agency Database Records 11
4.1.2 State and Tribal Agency Database Records 12
4.1.3 Local Regulatory Agency Records 15
4.1.4 Vapor Migration 16
4.2 Physical Setting 16
4.2.1 Topography 16
4.2.2 Geology and Soils 17
4.2.3 Hydrogeology and Hydrology 17
4.3 Historical Use of the Subject Property and Adjoining Properties 17
4.3.1 Aerial Photographs 18
4.3.2 Fire Insurance Maps 18
4.3.3 Topographic Maps 18
4.3.4 Street Directories 19
4.3.5 Recorded Land Title Records 19
4.3.6 Property Tax Records 19
4.3.7 Environmental Liens and Activity and Use Limitations 19
4.3.8 Previous Environmental Reports 20
4.3.9 Other Historical Records and Interviews 20
5.0 SUBJECT PROPERTY RECONNAISSANCE **21**
5.1 Methodology and Limiting Conditions 21
5.2 Hazardous Substances and Petroleum Products 21
5.2.1 Hazardous Substances and Petroleum Products (Identified Uses) 21
5.2.2 Hazardous Substances and Petroleum Products (Unidentified Uses) 21
5.2.3 Unidentified Substances Containers 21
5.3 Waste Generation, Storage, and Disposal 21

5.4 Underground Storage Tanks (USTs) & Aboveground Storage Tanks (ASTs) 21
5.4.1 Existing Storage Tanks 21
5.4.2 Former Storage Tanks 21
5.5 Oil-Containing Equipment and Polychlorinated Biphenyls (PCBs) 22
5.6 Additional Site Conditions 22
6.0 INTERVIEWS 23
7.0 CONSIDERATIONS OUTSIDE THE SCOPE OF ASTM PRACTICE E 1527-13 24
7.1 Asbestos-Containing Material (ACM) 24
7.2 Radon 24
7.3 Lead-Based Paint (LBP) 24
7.4 Lead in Drinking Water 24
8.0 FINDINGS AND OPINIONS 26
9.0 RECOMMENDATIONS 27
10.0 REFERENCES 28

APPENDIX A PHOTOGRAPHS
APPENDIX B FIGURES
APPENDIX C PRE-SURVEY QUESTIONNAIRE AND OTHER RELEVANT DOCUMENTATION
APPENDIX D PROFESSIONAL QUALIFICATIONS
APPENDIX E REGULATORY DATABASE REPORT
APPENDIX F HISTORICAL DOCUMENTATION
APPENDIX G TERMINOLOGY

EXECUTIVE SUMMARY

At the request of Bedford Marketplace, LLC, EBI has performed a Phase I Environmental Site Assessment (ESA) of the property located at Intersections of Eagle Glen Parkway / Cajalco Road / Bedford Canyon Road / I-15 in Corona, California, herein referred to as the Subject Property. The main objective of this ESA was to identify *recognized environmental conditions* in connection with the Subject Property, defined in ASTM Practice E 1527-13 as the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: 1) due to any release to the environment, 2) under conditions indicative of a release to the environment, or 3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not recognized environmental conditions. This ESA also includes a preliminary evaluation of certain potential environmental conditions that are outside the scope of ASTM Practice E 1527-13.

The Subject Property includes one irregular-shaped parcel, totaling approximately 10.03 acres. The Subject Property consists of a vacant, undeveloped land lot. The Subject Property is bound to the northeast by vacant, graded land, to the southeast by a large detention basin, to the southwest by graded land, and to the northwest by Eagle Glen Parkway/Cajalco Road.

Below is the Assessment Summary Table presenting our recommended actions for the Subject Property. EBI's Findings and Opinions are presented in Section 8.0, and recommendations for further action or investigation are presented in Section 9.0.

ASSESSMENT SUMMARY TABLE
BEDFORD MARKETPLACE - ARANTINE HILLS TRACT 8
INTERSECTIONS OF EAGLE GLEN PARKWAY / CAJALCO ROAD / BEDFORD CANYON ROAD / I-15, CORONA, CALIFORNIA

ASSESSMENT COMPONENT	SECTION	NO FURTHER ACTION	REC	HREC	CREC	OTHER	RECOMMENDED ACTION	ESTIMATED COST
Current Occupants/ Operations	**2.3, 5.0**	☒	☐	☐	☐	☐	No Further Action	
Historical Review	**4.3**	☒	☐	☐	☐	☐	No Further Action	
Regulatory Review	**4.1**	☒	☐	☐	☐	☐	No Further Action	
Potential Off-site Sources	**2.5, 4.1**	☒	☐	☐	☐	☐	No Further Action	
Hazardous Substances / Petroleum Products	**5.2**	☒	☐	☐	☐	☐	No Further Action	
Other Suspect Containers	**5.2**	☒	☐	☐	☐	☐	No Further Action	
Waste Generation	**5.3**	☒	☐	☐	☐	☐	No Further Action	
USTs	**5.4**	☒	☐	☐	☐	☐	No Further Action	
ASTs	**5.4**	☒	☐	☐	☐	☐	No Further Action	
PCBs	**5.5**	☒	☐	☐	☐	☐	No Further Action	
Additional Site Conditions	**5.6**	☒	☐	☐	☐	☐	No Further Action	

Asbestos Containing Materials	**7.1**	☒	☐	☐	☐	☐	No Further Action	
Radon	**7.2**	☒	☐	☐	☐	☐	No Further Action	
Lead-based Paint	**7.3**	☒	☐	☐	☐	☐	No Further Action	
Lead in Drinking Water	**7.4**	☒	☐	☐	☐	☐	No Further Action	
Vapor Migration	**4.1.4**	☒	☐	☐	☐	☐	No Further Action	

1.0 INTRODUCTION

This report documents the findings, opinions, and conclusions of a Phase I Environmental Site Assessment (ESA) of the property located at Intersections of Eagle Glen Parkway / Cajalco Road / Bedford Canyon Road / I-15 in Corona, California.

1.1 PURPOSE

The purpose of this ESA was to identify *recognized environmental conditions* and certain environmental conditions outside the scope of ASTM Practice E 1527-13 in connection with the property at the time of the property reconnaissance.

1.2 SCOPE-OF-SERVICES

This ESA was conducted utilizing a standard of good commercial and customary practice that was consistent with the ASTM Practice E 1527-13. Any significant scope-of-work additions, deletions or deviations to ASTM Practice E 1527-13 are noted below or in the corresponding sections of this report. The scope-of-work for this assessment included an evaluation of the following:

- Physical characteristics of the Subject Property through a review of referenced sources for topographic, geologic, soils and hydrologic data.
- Subject Property history through a review of referenced sources such as land deeds, fire insurance maps, city directories, aerial photographs, prior reports, and interviews.
- Current Subject Property conditions, including observations and interviews regarding the following: the presence or absence of hazardous substances or petroleum products; generation, treatment, storage, or disposal of hazardous, regulated, or biomedical waste; equipment that utilizes oils which potentially contain PCBs; and storage tanks (aboveground and underground).
- Usage of surrounding area properties and the likelihood for releases of hazardous substances and petroleum products (if known and/or suspected) to migrate onto the Subject Property.
- Information in referenced environmental agency databases and local environmental records, within specified minimum search distances.
- Past ownership through a review of available prior reports and local municipal file review.

The scope-of-work also included consideration of the following potential environmental conditions that are outside the scope of ASTM Practice E 1527-13: asbestos-containing materials (ACM), lead-based paint (LBP), lead in drinking water, and radon.

1.3 ASSUMPTIONS, LIMITATIONS AND EXCEPTIONS

This Phase I Environmental Site Assessment (the report) has been prepared for the use of Bedford Marketplace, LLC, in accordance with our Standard Conditions for Engagement and Authorization Letter and Agreement for Environmental Services approved and signed by Bedford Marketplace, LLC (the Agreement), and with the limitations described below, all of which are integral parts of this report. A copy of the signed Standard Conditions For Engagement and Authorization Letter and Agreement for Environmental Services is maintained at the EBI Consulting office in Burlington, Massachusetts. To the

extent any provisions of this report conflict with the terms of the Agreement, the Agreement will control.

EBI has performed this Phase I Environmental Site Assessment in conformance with the scope and limitations of *ASTM Standard E 1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. This report was prepared with no exceptions or deletions from ASTM Standard E 1527-13.

This Phase I Environmental Site Assessment has been prepared to assess a parcel of commercial real estate with respect to the range of contaminants within the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601) and petroleum products. As such, this practice is intended to permit *Bedford Marketplace, LLC* to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on CERCLA liability: that is, the practices that constitute "all appropriate inquiry into the previous ownership and uses of the Subject Property consistent with good commercial or customary practice" as defined in 42 U.S.C. § 9601(35)(B).

In defining a standard of good commercial and customary practice for conducting an environmental site assessment of a parcel of property, the goal of the processes established by this practice is to identify *recognized environmental conditions*. The term recognized environmental conditions means the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property (1) due to a release to the environment, (2) under conditions that indicate an existing release or a past release, or (3) under conditions that pose a material threat of a future release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term does not include *de minimis conditions* that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

The information reported was obtained through sources deemed reasonably ascertainable, as defined in ASTM Standard E 1527-13; a visual site survey of areas readily observable, easily accessible or made accessible by the Subject Property contact and interviews with owners, agents, occupants, or other appropriate persons involved with the Subject Property and a review of standard federal, state, and tribal environmental record sources. Municipal information was obtained through review of reasonably ascertainable standard government record sources and interviews with the authorities having jurisdiction over the Subject Property. Findings, conclusions, and recommendations included in the report are based on our visual observations in the field, the standard environmental record sources and municipal information reasonably obtained, information provided by the Client, and/or a review of readily available and supplied documents and drawings. EBI relies completely on the information, whether written, graphic, or verbal, provided by the Subject Property contact or as shown on any documents reviewed or received from the Subject Property contact, owner or agent, or municipal source, and assumes that information to be true and correct unless the information is known to be inaccurate or if it is obvious, based on other information obtained as part of the assessment, that the information is not accurate. Although there may have been some degree of overlap in the information provided by these various sources, EBI did not attempt to verify independently the accuracy or completeness of all information reviewed or received during the course of these environmental services.

The information reported, as well as EBI's findings, conclusions, and recommendations are based upon sources deemed reasonably ascertainable, as defined in ASTM Standard E 1527-13; a visual site survey of areas readily observable, easily accessible or made accessible by the Subject Property contact and interviews with owners, agents, occupants, or other appropriate persons involved with the Subject

Property and a review of standard federal, state, and tribal environmental record sources. Municipal information was obtained through review of reasonably ascertainable standard government record sources and interviews with authorities having jurisdiction over the Subject Property. *Bedford Marketplace, LLC* agrees that EBI has no obligation to independently verify the accuracy or completeness of the information reviewed or received during the course of these environmental services.

EBI renders no opinion as to the presence of hazardous substances or petroleum products in, on or under un-surveyed and/or inaccessible portions of the Subject Property. Unsurveyed and inaccessible portions of the Subject Property are described below. In addition, EBI renders no opinion as to the presence of hazardous substances or petroleum products in, on or under the Subject Property where direct observation of the interior walls, floor, or ceiling of a structure was obstructed by objects or coverings on or over these surfaces.

EBI services and opinions are based on the scientific or technical tests or procedures specifically set forth in the scope of the Services described in this report. The ASTM Standard E 1527-13 does not encompass analytical testing to evaluate asbestos containing materials, radon, lead-based paint, drinking water quality, indoor air quality, stored chemicals, debris, fill materials, surface water, or subsurface samples (soil and groundwater) as part of a Phase I ESA. Because geologic and soil formations are inherently random, variable, and indeterminate in nature, the Services and opinions provided under this Agreement are not guaranteed to be a representation of actual conditions on the Subject Property, which are also subject to change with time as a result of natural or man-made processes, including water permeation. In performing the Services, EBI used that degree of care and skill ordinarily exercised by environmental consultants or engineers performing similar services in the same or similar locality at the same time and under similar circumstances. No other representation, expressed or implied, and no warranty or guarantee is included or intended. The report speaks only as of its date, in the absence of a specific written update of the report, signed and delivered by EBI. Additional information that becomes available after our survey and draft submission concerning the Subject Property should be provided to EBI so that our conclusions may be revised and modified if necessary, at additional cost.

Client and EBI agree that to the fullest extent permitted by law, EBI shall not be liable to Client for any special, indirect, consequential, punitive, exemplary, incidental or indirect damages or losses whatsoever, whether caused by EBI's negligence, errors, omissions, strict liability, breach of contract, breach of warranty or other cause or causes whatsoever.

The assessment was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession, and in accordance with generally accepted practices of other consultants currently practicing in the same locality under similar conditions.

1.4 SPECIAL TERMS AND CONDITIONS

The purpose of this report is to acquire environmental information, observe the general condition and maintenance status of the Subject Property, to suggest remediation and/or maintenance practices considered customary for the Subject Property to continue in its current operation, compared to properties of similar age and condition, and to identify recognized environmental conditions in connection with the Subject Property described in this report.

This Report was performed utilizing methods and procedures consistent with established commercial practices and in conformance with industry standards. The suggestions represent EBI Consulting's opinion based on written, graphic or verbal information, the property condition and data available to us at the time of the survey. Factual information regarding operations, conditions or data provided by the Client, occupants, owner or their representative has been assumed to be correct and complete.

Reliance on the Report and the information contained herein shall mean (i) the Report may be relied upon by a lender to be selected by Bedford Marketplace, LLC, in determining whether to make a loan evidenced by a note secured by the Property ("the Mortgage Loan"); (ii) the Report may be relied upon by any purchaser in determining whether to purchase the Mortgage Loan (but not the Subject Property) from that lender, or an interest in the Mortgage Loan or securities backed or secured by the Mortgage Loan, and any rating agency rating securities representing an interest in the Mortgage Loan or backed or secured by the Mortgage Loan; (iii) the Report may be referred to in and included, in whole or in part, with materials offering for sale the Mortgage Loan or an interest in the Mortgage Loan or securities backed or secured by the Mortgage Loan; (iv) the Report speaks only as of its date in the absence of a specific written update of the Report signed and delivered by EBI Consulting.

1.5 DATA GAPS

Any data gaps identified herein, as defined by ASTM Practice E1527-13 § 3.2.20, are not considered to have significantly affected the ability to identify recognized environmental conditions in connection with the Subject Property and do not alter the conclusions of this report.

2.0 SUBJECT PROPERTY DESCRIPTION

2.1 OWNERSHIP AND LOCATION

According to the Riverside County Assessor's Office, the Subject Property (two land lots) is currently owned by "Arantine Hills Holding LP."

The Subject Property is located at Intersections of Eagle Glen Parkway / Cajalco Road / Bedford Canyon Road / I-15 in City of Corona, Riverside County, CA. The Subject Property includes one irregular-shaped parcel, identified by the Riverside County Assessor's Office as Map 279, Parcel 240, Lot 021-7, totaling approximately 10.03 acres. The Subject Property is located to the southwest of Interstate 15 and to the southeast of Eagle Glen Parkway/Cajalco Road. Figure 1 - Location Map depicts the location of the Subject Property on a street map of Corona, CA. Figure 2 - Locus Map depicts the location of the Subject Property on the Corona South, CA and Lake Matthews, CA United States Geological Survey (USGS) 7.5 Minute Topographic Quadrangles. Figure 3 - Site Plan depicts the configuration of the Subject Property and adjoining properties.

2.2 SUBJECT PROPERTY IMPROVEMENTS

The Subject Property is comprised of an irregular-shaped land lot that consists of vacant, undeveloped land. The Subject Property is bound to the northeast by vacant, graded land, to the southeast by a large detention basin, to the southwest by graded land, and to the northeast by Eagle Glen Parkway/Cajalco Road.

2.3 CURRENT USE OF THE SUBJECT PROPERTY

At the time of assessment, the Subject Property consisted of an undeveloped land lot.

Please refer to Section 5.2 for further discussion regarding hazardous substances and petroleum products at the Subject Property.

2.4 MUNICIPAL SERVICES & UTILITIES

The Subject Property area is serviced by the following municipal services and utilities:

MUNICIPAL SERVICES AND UTILITIES	
Utility	**Provider/Source**
Potable Water Supply	City of Corona Department of Water and Power
Sewage Disposal System	City of Corona
Electrical Service	City of Corona Department of Water and Power
Natural Gas Service	The Gas Company
Oil Service	Not provided
Heating/Cooling Systems	NA
Emergency Power	Not provided

2.5 ADJOINING PROPERTIES

Property use in the vicinity of the Subject Property is primarily characterized by retail/commercial development and vacant land.

ADJOINING PROPERTIES

ADJOINING PROPERTIES	
Northeast	The Subject Property is bound to the northeast by vacant land.
Southeast	The Subject Property is bound to the southeast by a large detention basin.
Southwest	The Subject Property is bound to the southwest by graded land.
Northwest	The Subject Property is bound to the northwest, by Eagle Glen Parkway/Cajalco Road, beyond which are commercial buildings located at 3877 Bedford Canyon Road and 2225 Eagle Glen Parkway. In addition to the commercial buildings, a Mobil brand gas station/auto repair facility is also located beyond Eagle Glen Parkway/Cajalco Road at 2261 Eagle Glen Parkway.

No visual evidence of adverse environmental conditions was observed during the survey of the adjoining properties. However, an address associated with the northwest adjacent property (2261 Eagle Glen Parkway) is listed on the UST regulatory databases, among others. This listing is further discussed in Section 4.1.

3.0 USER PROVIDED INFORMATION

The following section summarizes information provided by Bedford Marketplace, LLC with regard to this Phase I Environmental Site Assessment. Additionally, a User Questionnaire was forwarded to the designated Client contact. The User Questionnaire has been completed and returned to our offices. The information requested in the User Questionnaire is intended to assist in gathering information that may be material to identifying recognized environmental conditions in connection with the Subject Property. The User Questionnaire and any additional documentation referenced below is presented in Appendix C.

3.1 TITLE RECORDS

Title record information associated with the Subject Property has not been provided to EBI by Bedford Marketplace, LLC. A detailed discussion regarding review of information obtained from other sources is presented in Section 4.3.5 of this report.

3.2 ENVIRONMENTAL LIENS AND ACTIVITY AND USE LIMITATIONS

Bedford Marketplace, LLC has provided no information regarding environmental liens or activity and use limitations in connection with the Subject Property. A discussion regarding environmental liens is presented in Section 4.3.7 of this report. A detailed discussion regarding activity and use limitations is presented in Sections 4.1.1 and 4.1.2 of this report.

3.3 SPECIALIZED KNOWLEDGE

Bedford Marketplace, LLC provided no specialized knowledge that is material to recognized environmental conditions in connection with the Subject Property. EBI was not provided with or made aware of previous environmental assessments or other documentation that is material to recognized environmental conditions in connection with the Subject Property, except as presented in Section 4.3.8 of this report.

3.4 COMMONLY KNOWN OR REASONABLY ASCERTAINABLE INFORMATION

Bedford Marketplace, LLC has provided no commonly known or reasonably ascertainable information within the local community about the Subject Property that is material to recognized environmental conditions in connection with the Subject Property.

3.5 VALUATION REDUCTION FOR ENVIRONMENTAL ISSUES

Bedford Marketplace, LLC has provided no information regarding valuation reduction for environmental issues in connection with the Subject Property.

3.6 OWNER, PROPERTY MANAGER, AND OCCUPANT INFORMATION

Bedford Marketplace, LLC provided contact information for the Subject Property owner, manager and/or occupants.

3.7 REASON FOR PERFORMING PHASE I ESA

Bedford Marketplace, LLC retained EBI to complete this Phase I Environmental Site Assessment in connection with a real estate transaction.

4.0 RECORDS REVIEW

4.1 STANDARD ENVIRONMENTAL RECORDS

A review of standard environmental databases maintained by Federal, state, and tribal offices was completed through Environmental Data Resources, Inc. (EDR) of Shelton, Connecticut. The databases were searched for properties with reported environmental conditions located within approximate minimum search distances as specified by ASTM Standard E 1527-13, by using geocoding information that identified the coordinates of the properties in the databases or by checking the street addresses of practically reviewable non-geocoded "orphan" properties within the same zip code. The database report is presented in Appendix E.

The database report did not identify any "orphan sites". Orphan sites are those sites that could not be accurately mapped or geocoded due to inadequate location information.

It should be noted that plotted locations of listed sites are not always accurate. With regard to listings that are determined or suspected to be inaccurate, based on information from other sources such as direct observation or consultation with individuals familiar with the property, EBI uses the best available data when evaluating the location of listed sites discussed below.

The following table provides a summary of the findings of the environmental database report. Specific properties identified within the database report are further discussed below.

SUMMARY OF FEDERAL, STATE, AND TRIBAL AGENCY DATABASE FINDINGS			
Regulatory Database	**Approximate Minimum Search Distance**	**Subject Property Listed**	**Off-site Listings Within Search Distance**
Federal NPL Sites	1.0 mile	No	0
Federal Delisted NPL Sites	0.5 mile	No	0
Federal CERCLIS Sites	0.5 mile	No	0
Federal CERCLIS NFRAP Sites	0.5 mile	No	0
Federal RCRA CORRACTS Sites	1.0 mile	No	0
Federal RCRA non-CORRACTS TSD Sites	0.5 mile	No	0
Federal RCRA Generators Sites	Property & Adjoining	No	0
Federal Engineering / Institutional Control Sites	0.5 mile	No	0
Federal ERNS Sites	Property	No	NA
CA Annual Workplan Sites (AWP)	1.0 mile	No	0
CA High-Priority Confirmed Release Sites (RESPONSE)	1.0 mile	No	0
CA Hazardous Waste Sites (ENVIROSTOR)	1.0 mile	No	**1**
CA Cal-Sites/HIST Cal-Sites	1.0 mile	No	0
CA Proposition 65 Notification Records (Notify 65)	1.0 mile	No	0
CA Toxic Pits Cleanup Act Sites (Toxic Pits)	1.0 mile	No	0
CA Bond Expenditure Plan	1.0 mile	No	0
CA Hazardous Waste and Substances Sites List (Cortese/HIST Cortese)	0.5 mile	No	0
CA Spill, Leaks, Investigations, and Cleanup (SLIC)	0.5 mile	No	0
CA Voluntary Cleanup Program (VCP) Properties	0.5 mile	No	0
CA Leaking Underground and Aboveground Storage Tanks (LUST/LAST)	0.5 mile	No	0
CA Storage Tank Databases (AST. UST, FID UST, HIST UST, SWEEPS UST)	Property & Adjoining	No	**1**

SUMMARY OF FEDERAL, STATE, AND TRIBAL AGENCY DATABASE FINDINGS			
Regulatory Database	**Approximate Minimum Search Distance**	**Subject Property Listed**	**Off-site Listings Within Search Distance**
CA Solid Waste Information System (SWIS and SWF/LF)	0.5 mile	No	0
CA Waste Management Unit Database / Solid Waste Assessment Test (WMUDS/SWAT)	0.5 mile	No	0
CA Hazardous Material Incident Report System (CHMIRS)	Property	No	NA
CA Hazardous Waste Information System (HAZNET)	Property	No	NA
CA Engineering Control / Institutional Control Registries	0.5 mile	No	0
CA Brownfields	0.5 mile	No	0
Tribal Environmental Databases	1.0 mile	No	0

4.1.1 Federal Agency Database Records

National Priority List (NPL)
The NPL database, also known as the Superfund List, is a subset of CERCLIS and identifies sites that are ranked as high priority for remedial action under the Federal Superfund Act. Neither the Subject Property nor any sites located within 1.0 mile of the Subject Property were identified on the NPL.

Delisted National Priority List (NPL)
The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425(e), sites may be deleted from the NPL where no further response is appropriate. Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on the Delisted NPL database.

Superfund Enterprise Management System (SEMS)
SEMS tracks federal hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of the USEPA's Superfund Program. The list was formerly known as CERCLIS and was renamed at the end of 2015. The list contains data regarding potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies, and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). SEMS also contains sites that are either proposed to or on the National Priority List (NPL), as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on the SEMS database.

SEMS – ARCHIVE
SEMS-ARCHIVE tracks sites that have been removed from the SEMS list. This list was formerly known as the CERCLIS- NFRAP list and was renamed SEMS-Archive at the end of 2015. SEMS-ARCHIVE sites may be sites where, following an initial investigation, no contamination was found, contamination was removed without the need for the site to be placed on the NPL, or the contamination was not considered sufficient to warrant Federal Superfund action or NPL consideration. Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on the SEMS-ARCHIVE database.

Resource Conservation and Recovery Act (RCRA) – Corrective Action Tracking System (CORRACTS)
RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS). The database includes selective information regarding sites that generate, transport, store, treat, and/or dispose of hazardous waste as defined by RCRA. The RCRA-CORRACTS database identifies TSD facilities that have conducted, or are currently conducting, corrective action(s) as regulated under RCRA. Neither the Subject Property nor any sites located within 1.0 mile of the Subject Property were identified on the RCRA CORRACTS database.

RCRA non-CORRACTS Treatment, Storage and/or Disposal (TSD) Facilities
RCRA non-CORRACTS Treatment, Storage and/or Disposal (TSD) facilities are required to register hazardous waste activity under the Resource Conservation and Recovery Act (RCRA). Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on the RCRA non-CORRACTS TSD database.

RCRA Hazardous Waste Generators
Hazardous waste generators tracked under the Resource Conservation and Recovery Act (RCRA) are classified as either Large Quantity Generators (LQGs), Small Quantity Generators (SQGs), or Conditionally Exempt Small Quantity Generators (CESQG). A RCRA-LQG is defined as a facility that generates over 1,000 kilograms (Kg) of hazardous waste, or over 1 Kg of acutely hazardous waste per month. A RCRA-SQG is defined as a facility that generates between 100 Kg and 1,000 Kg of hazardous waste per month. A RCRA-CESQG is defined as a facility that generates less than 100 Kg of hazardous waste, or less than 1 Kg of acutely hazardous waste per month. Neither the Subject Property nor any adjoining properties were identified on the RCRA Generator database.

Federal Engineering Control / Institutional Control Registries
The completion of site cleanup activities may include the implementation of engineering controls or institutional controls as part of the response action. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls. Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on Federal Engineering Control or Institutional Control Registries.

Emergency Response Notification System (ERNS)
ERNS is a national database used to collect information regarding reported releases of petroleum products and/or hazardous substances. The database contains information from spill reports submitted to Federal agencies, including the EPA, the U.S. Coast Guard, the National Response Center, and the U.S. Department of Transportation. A review of this database was conducted in order to determine whether any spills or incidents involving releases of hazardous substances or petroleum products have occurred at the Subject Property. The Subject Property was not identified on the ERNS database.

4.1.2 State and Tribal Agency Database Records

Annual Workplan Sites (AWP)
The California Department of Toxic Substance Control (DTSC) Annual Workplan Sites (AWP) identifies known hazardous substance release sites targeted for cleanup. The data source is the

California Environmental Protection Agency. Neither the Subject Property nor any sites located within 1.0 mile of the Subject Property were identified on the AWP database.

California High-Priority Confirmed Release Sites (RESPONSE)
The California High-Priority Confirmed Release Sites (RESPONSE) database contains confirmed release sites where the California Department of Toxic Substance Control (DTSC) is involved in the remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk. Neither the Subject Property nor any sites located within 1.0 mile of the Subject Property were identified on the RESPONSE database.

California Hazardous Waste Sites (ENVIROSTOR)
The California Hazardous Waste Sites (ENVIROSTOR) database contains potential or confirmed hazardous substance release sites, or sites for which there may be reasons to investigate further, identified by the California DTSC. The database includes the following site types: Federal NPL; State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. The Subject Property was not identified on the ENVIROSTOR database. However, one site located within 1.0 mile of the Subject Property was identified on the ENVIROSTOR database. The listing is located over 0.25 mile from the Subject Property and based on separating distance, it is considered unlikely to represent an environmental concern to the Subject Property.

Cal-Sites/HIST Cal-Sites
Formerly known as ASPIS, this database contains both known and potential hazardous substance sites. The source is the California Department of Toxic Substance Control (DTSC). This database is no longer updated by the state agency. It has been replaced by ENVIROSTOR. Neither the Subject Property nor any sites located within 1.0 mile of the Subject Property were identified on the Cal-Sites/HIST Cal-Sites databases.

Proposition 65 Notification Records (Notify 65)
Proposition 65 Notification Records contain facility notifications regarding any release that could potentially impact drinking water and thereby expose the public to a potential health risk. The Notify 65 database includes listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency. Neither the Subject Property nor any sites located within 1.0 mile of the Subject Property were identified on the Notify 65 database.

Toxic Pits Cleanup Act Sites (Toxic Pits)
The Toxic Pits Cleanup Act Sites (Toxic Pits) database contains sites identified by the California Water Resources Control Board that are suspected to contain hazardous substances where cleanup has not yet been completed. Neither the Subject Property nor any sites located within 1.0 mile of the Subject Property were identified on the Toxic Pits database.

California Bond Expenditure Plan
The California Bond Expenditure Plan was developed by the California Department of Health Services as a site-specific expenditure plan for the appropriation of Hazardous Substance Cleanup Bond Act funds. Neither the Subject Property nor any sites located within 1.0 mile of the Subject Property were identified on the California Bond Expenditure Plan database.

Hazardous Waste and Substances Sites List (Cortese/HIST Cortese)
The Hazardous Waste and Substance Site List (also known as the Cortese/HIST Cortese databases) is a planning document used by the State, local agencies, and developers to comply with California Environmental Quality Act requirements in providing information regarding the location of hazardous

materials releases. Government Code Section 65962.5 requires the California Environmental Protection Agency to develop at least annually an updated Cortese List. The California DTSC is responsible for preparing a portion of the information that comprises the Cortese List, and other state and local government agencies are required to provide additional hazardous material release information for the Cortese/HIST Cortese databases. Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on the Cortese/HIST Cortese databases.

Spill, Leaks, Investigations, and Cleanup (SLIC)
The Spills, Leaks, Investigations, and Cleanups (SLIC) database, maintained by the California Water Resources Control Board, includes unauthorized discharges from spills and leaks, other than from underground storage tanks or other regulated sites. Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on the SLIC database.

Voluntary Cleanup Program (VCP) Properties
The Voluntary Cleanup Program (VCP) Properties database identifies low threat level properties with either confirmed or unconfirmed releases, for which the project proponents have requested that Department of Toxic Substances Control (DTSC) oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs. Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on the VCP database.

Leaking Underground and Aboveground Storage Tank Sites (LUST/LAST)
The Regional Water Quality Control Board (RWQCB) maintains a database of reported Leaking Storage Tank (LUST/LAST) sites. Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on the LUST/LAST databases.

California UST Databases (AST, UST, FID UST, HIST UST, SWEEPS UST)
The California Environmental Protection Agency, the California Water Resources Control Board and other entities previously maintained or currently maintain various lists recording permitted aboveground and underground storage tank (AST/UST) sites in California. The Subject Property was not identified on the AST/UST databases. However, one adjoining property was identified on the AST/UST databases. Information regarding the listed site is presented in the following table:

CA UST DATABASES				
Location	**Distance / Direction / Gradient**	**Capacity / Contents**	**Year Installed**	**Status**
Eagle Glen Mobil 2261 Eagle Glen Parkway Corona, CA	Adjacent / Northwest / Crossgradient	Three tanks / not reported	Not reported	Not reported

* Presumed hydrogeologic gradient based upon regional topography

Based upon the absence of reported releases, the separating distance, and presumed hydrogeologic gradient relative to the Subject Property, it is considered unlikely that conditions associated with the identified site represent an environmental concern to the Subject Property.

Solid Waste Information System (SWIS and SWF/LF)
The Solid Waste Information System (SWIS and SWF/LF) facility database contains information on solid waste facilities, operations, and disposal sites throughout the State of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites. For each facility, the database contains information about location, owner, operator, facility type, regulatory and operational status, authorized waste types, local enforcement agency and inspection and enforcement records. Neither the Subject

Property nor any sites located within 0.5 mile of the Subject Property were identified on the SWIS and SWF/LF databases.

Waste Management Unit Database / Solid Waste Assessment Test (WMUDS/SWAT)
The Waste Management Unit Database (WMUDS) is used by the California Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs) for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information. Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on the WMUDS/SWAT database.

California Hazardous Material Incident Report System (CHMIRS)
The California Hazardous Material Incident Report System (CHMIRS) contains information regarding reported hazardous material incidents (i.e. accidental releases or spills). The data source is the California Office of Emergency Services. The Subject Property was not identified on the CHMIRS database.

Hazardous Waste Information System (HAZNET)
The California Environmental Protection Agency maintains a list of facilities that issue hazardous waste manifests. The source of the manifest records is the California Department of Toxic Substance Control (DTSC). Inclusion on the HAZNET database does not necessarily indicate the existence of an environmental concern, such as a release or spill incident. The Subject Property was not identified on the HAZNET database.

State and Tribal Engineering Control / Institutional Control Registries
The completion of site cleanup activities may include the implementation of engineering controls or institutional controls as part of the response action. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls. Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on state or tribal Engineering Control or Institutional Control Registries.

State and Tribal Brownfield Sites
Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on state or tribal Brownfield Sites databases.

Tribal Environmental Databases
The United States Bureau of Indian Affairs (BIA) is responsible for the administration and management of 55.7 million acres of land held in trust by the United States for American Indians, Indian tribes, and Alaska Natives. There are 562 federally recognized tribal governments in the United States. The environmental database report identifies tribal administered lands of the United States that have any area equal to or greater than 640 acres. No tribal administered lands were identified within 1.0 mile of the Subject Property.

4.1.3 Local Regulatory Agency Records

Local municipal offices consulted during the completion of this assessment included the following:

City of Corona Building Department
EBI searched for available files regarding the Subject Property on the City of Corona Building Department's online database regarding past uses of the Subject Property. However, as per the database, the City of Corona does not have any building permits associated with the Subject Property APNs.

County of Riverside Department of Environmental Health
EBI has submitted a written request to the County of Riverside Department of Environmental Health for information regarding the generation, transportation, storage, treatment, disposal, and/or spills or releases of hazardous substances or petroleum products at the Subject Property, in accordance with the Freedom of Information Act (FOIA). As of the date of this report, EBI has not received a response to this inquiry. Upon receipt of the agency response, if the provided information has a material effect on the findings of this report, EBI will forward this information as an addendum to this report. If no response is received, or no material information is identified, our report will not be modified.

State Water Resources Control Board
EBI searched the SWRCB's Geotracker database through their website. This website lists regulated facilities in California including leaking USTs, other contaminated properties reported on the Spills, Leaks, Investigations and Cleanup List (SLIC), wells, land disposal sites, military sites and permitted UST sites. The Subject Property was not identified on the Geotracker database.

Department of Toxic Substances Control (DTSC)
EBI searched the DTSC's databases of Hazardous Waste and Substances Site List – Site Cleanup and EnviroStor List that includes NPL sites, State Response Sites, Voluntary Cleanup Sites, School Cleanup Sites and Corrective Action Sites at the website http://www.envirostor.dtsc.ca.gov/public/default.asp. The Subject Property was not identified on the DTSC's database.

4.1.4 Vapor Migration

EBI conducted a vapor migration screening survey of the Subject Property. This vapor migration screening was conducted in accordance with ASTM E1527-13 and is not intended to satisfy the requirements of ASTM E2600-15. The scope of this screening was limited to visual observations and review of the environmental database report and did not include the collection and laboratory analysis of air samples to confirm or refute the presence of airborne contaminants by vapor intrusion.

EBI's site observations and review of the environmental database report (cited in Section 4.1) did not identify any conditions on the Subject Property or on adjoining properties that would indicate a REC relative to vapor migration at the Subject Property.

4.2 PHYSICAL SETTING

4.2.1 Topography

The Subject Property is located at an elevation of approximately 905 feet above mean sea level (msl). The topography of the Subject Property is relatively flat and slopes gently to the northeast. The Subject Property is located in a relatively flat area, and the general slope of the surrounding region is to the northeast (see Figure 2 - Locus Map, which depicts the location of the Subject Property on the Corona South, CA and Lake Matthews, CA USGS 7.5 Minute Topographic Quadrangles).

4.2.2 Geology and Soils

No bedrock outcroppings were observed at the Subject Property. Information concerning the geology of the Subject Property was obtained from the USGS Ground Water Atlas of the United States, California region (1995). The Subject Property is located within the Pacific Border physiographic province, which is characterized by steep rolling hills and mountains and consists of severely folded, faulted, commonly metamorphosed marine and continental sediments.

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey (WSS) website (http://websoilsurvey.nrcs.usda.gov), there is no soil data available for the Subject Property.

Near-surface geology in heavily developed areas such as the Subject Property and vicinity is considered "urban land" and is characterized by a non-homogeneous distribution of soil and fill types. Excavation and backfilling for building foundations, utility conduits, subway systems and other construction results in a varied subsurface profile. In this setting, estimation of local subsurface parameters such as permeability, moisture content, and organic fraction is not feasible without site-specific testing data.

4.2.3 Hydrogeology and Hydrology

No natural surface water bodies were identified on or adjacent to the Subject Property. There are no downgradient surface water bodies within one mile of the Subject Property.

Local groundwater gradient is expected to follow surface topography; therefore, groundwater flow near the Subject Property is expected to flow to the northeast. Groundwater depths and flow gradients are best evaluated by a subsurface investigation involving the installation of at least three groundwater monitoring wells and precise measurements of hydrostatic pressure. Monitoring wells were not observed on the Subject Property.

4.3 HISTORICAL USE OF THE SUBJECT PROPERTY AND ADJOINING PROPERTIES

EBI attempted to determine the history of the Subject Property dating back to 1940 or first developed use. The following table summarizes the historical use of the Subject Property and surrounding area.

HISTORICAL USE SUMMARY			
Period	**Historical Uses**		**Source(s)**
	Subject Property	**Surrounding Area**	
At least 1931-1953	Vacant land with a small structure during at least 1931-1938.	Primarily Undeveloped land.	Aerial Photographs Topographic Maps City Directories
1961-1995	Agricultural use; no structures present.	Agricultural use; no structures present.	Aerial Photographs Topographic Maps City Directories
2006-2009	Agricultural use; no structures present.	Agricultural use; no structures present, with the exception of the northwest adjacent property which was improved with commercial development	Aerial Photographs Topographic Maps City Directories
2012 to present	Vacant land.	Vacant land; no structures present, with the exception of the northwest adjacent property	Aerial Photographs Topographic Maps City Directories

No environmentally significant conditions were identified on the Subject Property or surrounding properties during the historical review.

4.3.1 Aerial Photographs

Historical aerial photographs may be used to evaluate changes in land use and to identify visible areas of potential environmental concern. A search for historical aerial photographs depicting the Subject Property and vicinity was conducted by Environmental Data Resources, Inc. (EDR). It should be noted that the scale of the available aerial photographs precludes the distinct identification of structures and/or land uses on or in the vicinity of the Subject Property. Aerial photographs depicting the Subject Property were reviewed and are summarized in the following table. Copies of the aerial photographs are presented in Appendix F.

AERIAL PHOTOGRAPH SUMMARY		
Year	**Issues Noted**	**Observations**
1931, 1938	No	**Subject Property:** The Subject Property appears to consist primarily of vacant land. A small structure resembling a possible dwelling is located on the northwestern portion of the Subject Property.
		Surrounding Area: Surrounding properties to the northeast, southeast, and northwest appear to consist of vacant land. The adjacent property to the northeast appears to consist primarily of vacant land with the exception of a small structure resembling a possible dwelling.
1948	No	**Subject Property:** Conditions on the Subject Property appear to be similar to those depicted on the 1938 photograph, though the small structure previously noted on the northwest portion of the Subject Property is no longer apparent.
		Surrounding Area: Conditions on the surrounding properties appear to be similar to those depicted on the 1938 photograph.
1953	No	**Subject Property:** The Subject Property appears to consist of vacant land.
		Surrounding Area: The surrounding properties appear to consist of vacant land.
1961, 1967, 1975, 1985, 1990, 1995	No	**Subject Property:** The Subject Property appears to consist of agricultural land.
		Surrounding Area: The surrounding properties appear to consist of agricultural land.
2006, 2009	No	**Subject Property:** The Subject Property appears to consist of agricultural land.
		Surrounding Area: The surrounding properties appear to consist of agricultural land, with the exception of the northwest adjacent property which is improved with structures resembling the existing commercial buildings.
2012, 2016	No	**Subject Property:** The Subject Property appears to consist of vacant land.
		Surrounding Properties: With the exception of the northwest adjacent property, the surrounding properties appear to consist of vacant land.

4.3.2 Fire Insurance Maps

A search for historical fire insurance maps depicting the Subject Property and vicinity was conducted by EDR Sanborn Maps, Inc. The EDR Report indicated that coverage for the vicinity of the Subject Property was not available. A copy of the search documentation letter is presented in Appendix F.

4.3.3 Topographic Maps

Historical topographic maps provide information related to physical land configuration such as elevation, ground slope, surface water and other features. While most buildings in densely developed urban centers are not depicted, topographic maps typically show structures equal to or larger than the size of

a single-family residence in rural areas. Other notable features such as woods, pipelines, municipal boundaries, and areas of filled land are often marked on topographic maps.

A search for historical topographic maps depicting the Subject Property and vicinity was conducted by Environmental Data Resources, Inc. (EDR). Historical topographic maps depicting the Subject Property were reviewed and are summarized in the following table. Copies of the topographic maps are presented in Appendix F.

TOPOGRAPHIC MAP SUMMARY		
Year	**Issues Noted**	**Observations**
1902, 1947, 1953, 1967, 1973, 1982, 1988, 1997	No	**Subject Property:** No structures or other notable features are depicted on the Subject Property.
		Surrounding Properties: No structures or other notable features are depicted on the surrounding properties.
2012	No	**Subject Property:** The map depicts topography and infrastructure; distinct buildings are not shown.
		Surrounding Properties: The map depicts topography and infrastructure; distinct buildings are not shown.

4.3.4 Street Directories

Street directories are commercial publications containing names and addresses, and in many cases, occupations of the occupants of a particular community. The directories may also contain information pertaining to business processes conducted within a community. A search for historical street directories was conducted by Environmental Data Resources, Inc. (EDR).

According to a review of additional historical sources, the Subject Property has never been developed with structures and has not yet been assigned street addresses; hence, the Subject Property was not identified in the search of historical street directories. Copies of the street directories are presented in Appendix F.

4.3.5 Recorded Land Title Records

Land title records provide information on previous ownership of a property. Typically, deeds signifying transfer of a land parcel are recorded in county files and can be researched to determine the identity of past owners. A "chain of title" is a continuous record of ownership for a specific parcel. A 50-year chain of title search was not included in the scope of work for this assessment.

4.3.6 Property Tax Records

The property card for the Subject Property was not obtained at the Riverside County Assessor's Office. However, according to the Assessor's Office, the Subject Property is currently owned by "Arantine Hills Holdings LP." A listing of the former Subject Property owners was not available for review.

4.3.7 Environmental Liens and Activity and Use Limitations

A search for Environmental Liens and Activity and Use Limitations was not included in the scope of this assessment.

4.3.8 Previous Environmental Reports

EBI was not provided with or made aware of previous environmental assessments or other documentation regarding environmental investigations performed for the Subject Property. EBI did not identify previous environmental reports for the Subject Property at local agencies or other sources contacted during this assessment.

4.3.9 Other Historical Records and Interviews

A brief interview was conducted with Mr. Glen Powles (Guardian Capital) to obtain information regarding the history of the Subject Property. According to Mr. Powles, the Subject Property consists of a large vacant land lot. Several attempts were made to conduct further interviews to obtain additional information regarding the Subject Property, however, as of the date of this report, EBI has not received a response to these inquiries.

5.0 SUBJECT PROPERTY RECONNAISSANCE

The Subject Property reconnaissance was conducted by Mr. Christopher Evans, EBI Project Scientist, on June 7, 2019. Mr. Evans was unaccompanied during the Subject Property reconnaissance.

5.1 METHODOLOGY AND LIMITING CONDITIONS

The Subject Property reconnaissance consisted of visual and/or physical observations of the Subject Property and improvements, adjoining properties as viewed from the Subject Property boundaries, and the surrounding area based on visual observations made from adjacent public thoroughfares. Unimproved portions of the property were observed in a general grid pattern in accessible areas.

At the time of the survey, the weather was cloudy and approximately 70° Fahrenheit. During the survey, the open land lot (Subject Property) was observed. There were no significant portions of the Subject Property that were inaccessible or excluded from this survey.

5.2 HAZARDOUS SUBSTANCES AND PETROLEUM PRODUCTS

5.2.1 Hazardous Substances and Petroleum Products (Identified Uses)

EBI did not observe evidence of hazardous substance or petroleum products containers at the Subject Property that were not in connection with identified uses.

5.2.2 Hazardous Substances and Petroleum Products (Unidentified Uses)

EBI did not observe evidence of hazardous substance or petroleum products containers at the Subject Property that were not in connection with identified uses.

5.2.3 Unidentified Substances Containers

EBI did not observe evidence of unidentified substances containers at the Subject Property.

5.3 WASTE GENERATION, STORAGE, AND DISPOSAL

No evidence of improper solid waste management or the improper disposal of hazardous substances or petroleum products was observed at the time of reconnaissance.

5.4 UNDERGROUND STORAGE TANKS (USTS) & ABOVEGROUND STORAGE TANKS (ASTS)

5.4.1 Existing Storage Tanks

Based upon site reconnaissance, interviews, and a review of state and local records, EBI identified no evidence of existing USTs or ASTs located at the Subject Property.

5.4.2 Former Storage Tanks

Based upon site reconnaissance, interviews, and a review of state and local records, EBI identified no evidence of former USTs or ASTs located at the Subject Property.

5.5 OIL-CONTAINING EQUIPMENT AND POLYCHLORINATED BIPHENYLS (PCBS)

Polychlorinated biphenyls (PCBs) are a chemical component of many dielectric fluids, heat transfer fluids, hydraulic fluids, lubricating oils, paints, or coatings manufactured prior to July 2, 1979. Equipment that may potentially contain PCBs includes electrical equipment such as transformers or capacitors or hydraulically operated equipment, such as elevators, compaction equipment, or manufacturing equipment. The manufacture and distribution in commerce of PCBs was banned for use in 1979 by the United States Congress, which enacted the Toxic Substance and Control Act (TSCA). In accordance with *US Code of Federal Regulations Title 40 - Protection of Environment, Chapter I - Environmental Protection Agency, Subchapter R - Toxic Substance Control Act (TSCA), Part 761 - Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions*, the owner of a transformer or other PCB-containing equipment is responsible for equipment maintenance and remediation in the event of a leak or release.

Based upon the absence of transformers, hydraulic equipment or other oil-containing equipment, no potential PCB-containing equipment was identified at the Subject Property.

5.6 ADDITIONAL SITE CONDITIONS

Based upon site reconnaissance, interviews, and a review of applicable records, EBI identified no additional evidence of additional site conditions or concerns.

6.0 INTERVIEWS

The site contact or Key Site Manager was contacted to be interviewed to obtain information regarding recognized environmental conditions in connection with the property. Additionally, an ESA AAI User Questionnaire was forwarded to the designated Subject Property contact. The questionnaire has been completed and returned to our offices. The information requested in the Pre-Survey Questionnaire is intended to assist in gathering information that may be material to identifying recognized environmental conditions in connection with the Subject Property. The questionnaire and any accompanying documentation is presented in Appendix C.

KEY SITE MANAGER INTERVIEW			
Contact / Affiliation	**Date of Communication**	**Years Associated with Subject Property**	**Telephone No.**
Glen Powles Guardian Capital	06/03/2019	Not reported	(760) 780-7167

Pertinent information from the interviews is presented in applicable sections of this report.

7.0 CONSIDERATIONS OUTSIDE THE SCOPE OF ASTM PRACTICE E 1527-13

The following sections address environmental issues or considerations at the Subject Property that parties may wish to assess in connection with commercial real estate that are outside the scope of ASTM Practice E 1527-13 (non-scope considerations).

7.1 ASBESTOS-CONTAINING MATERIAL (ACM)

Asbestos is a term used to describe a group of six naturally occurring crystalline fiber minerals. Asbestos has excellent thermal stability, a high degree of tensile strength, and has been used extensively in the textile, insulation, and building industries, particularly as a component in fireproofing, decorative coatings, insulation materials, and as reinforcement for plaster binders in building products. Asbestos-containing building materials are generally classified as friable or non-friable. Friable materials are those that can be crumbled, pulverized, or reduced to powder by hand pressure, or by normal use or maintenance can be expected to emit asbestos fibers into the air. Non-friable ACM is a potential concern if it is damaged by maintenance work, demolition, or other activities, at which time it may be considered friable.

Based upon the lack of building improvements on the Subject Property and in accordance with the scope of work for this assessment, EBI did not conduct a survey for the presence of ACM.

7.2 RADON

Radon is a naturally-occurring, colorless and odorless radioactive gas that is generated primarily in granitic rocks. The United States Surgeon General has published information that radon is a cause of lung cancer. Radon usually enters a building through openings in the foundation, and therefore is a potential health concern to residents of the lowest level of a building with inadequate ventilation.

The EPA Map of Radon Zones indicates that Riverside County is located within a Zone 2 radon area. Zone 2 is defined as an area that has a moderate potential for radon gas, with a predicted average indoor radon screening level between 2.0 picoCuries per liter (pCi/L) and 4.0 pCi/L. The EPA recommended Action Level for radon is 4.0 pCi/L.

Based upon the lack of building improvements on the Subject Property and in accordance with the scope of work for this assessment, EBI did not conduct a limited short-term radon screening at the Subject Property.

7.3 LEAD-BASED PAINT (LBP)

Use of lead in household paint was banned by the U.S. Environmental Protection Agency (EPA) effective January 1, 1978. The EPA and the U.S. Department of Housing and Urban Development (HUD) consider lead-based paint as containing a lead concentration equal to or greater than 1.0 milligram per square centimeter (mg/cm^2) or 0.5% lead by weight, as defined by Title X of the 1992 Housing and Community Development Act.

Based on the lack of building improvements on the Subject Property and in accordance with the scope of work of this assessment, a lead-based paint (LBP) survey was not conducted at the Subject Property.

7.4 LEAD IN DRINKING WATER

Lead has historically been used in pipes, solder, and brass fixtures used in water distribution systems and building plumbing systems. In 1986, EPA banned the use of lead at concentrations exceeding 0.2% lead

in solder and 8% lead in other plumbing materials. Lead in drinking water results primarily from corrosion of lead containing materials in service lines or from corrosion of lead containing materials in building plumbing systems such as lead solder, brass, bronze, and other lead containing alloys. The EPA Action Level for lead in public drinking water supplies is 0.015 parts per million (ppm) or 0.015 milligrams per liter (mg /L).

At the time of the Subject Property reconnaissance, the Subject Property was not developed with any building improvements. Potable water service will be provided to the Subject Property by the City of Corona Department of Water and Power. Based upon review of the Water Quality Report, the municipal water supply meets all current criteria established by the Safe Drinking Water Act (SDWA) and local municipal drinking water standards, including those for lead. Based upon the existing municipal water service and in accordance with the scope of work for this assessment, EBI did not conduct lead-in-drinking water sampling at the Subject Property.

8.0 FINDINGS AND OPINIONS

EBI has performed this Phase I Environmental Site Assessment of the Subject Property in conformance with the scope and limitations of ASTM Standard E 1527-13. Any exceptions to, or deletions from, this practice are described in Section 1.0 of this report.

This assessment has identified no evidence of *recognized environmental conditions (RECs), historical recognized environmental conditions (HRECs), controlled recognized environmental conditions (CRECs), de minimis conditions*, or *considerations outside the scope of ASTM Practice E 1527-13,* in connection with the Subject Property.

9.0 RECOMMENDATIONS

Based upon the findings of this investigation, no further action is recommended.

10.0 REFERENCES

PHASE I ENVIRONMENTAL SITE ASSESSMENT REFERENCES

ASTM Designation E 1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.

Property Records: City of Corona Building Department.

Environmental Data Resources, Inc., EDR Historical Topographic Map report; Inquiry Number 5672537.4, dated June 4 2019.

Environmental Data Resources, Inc., The EDR Radius Report with GeoCheck®; Inquiry Number 05672537.2r, dated June 4 2019.

Environmental Data Resources, Inc., EDR Aerial Decade Package report; Inquiry Number 5672537.8, dated June 4 2019.

Environmental Data Resources, Inc., EDR Sanborn Map report; Inquiry Number 5672537.3, dated June 4 2019.

Environmental Data Resources, Inc., The EDR-City Directory Abstract; Inquiry Number 5672537.5, dated June 4 2019.

Records searched at the South Coast Air Quality Management District (SCAQMD) online database; http://www3.aqmd.gov/webappl/fim/prog/search.aspx.

Records searched at the California State Water Resource Board, GeoTracker database information system; http://geotracker.waterboards.ca.gov/.

APPENDIX A

PHOTOGRAPHS



1.	View of the Subject Property, looking southeast.



2.	View of the Subject Property, looking southeast.



3.	View of the Subject Property, looking southeast.



4.	View of the Subject Property, looking east.



5.	View of the Subject Property, looking northwest.



6.	View of the Subject Property, looking northeast.



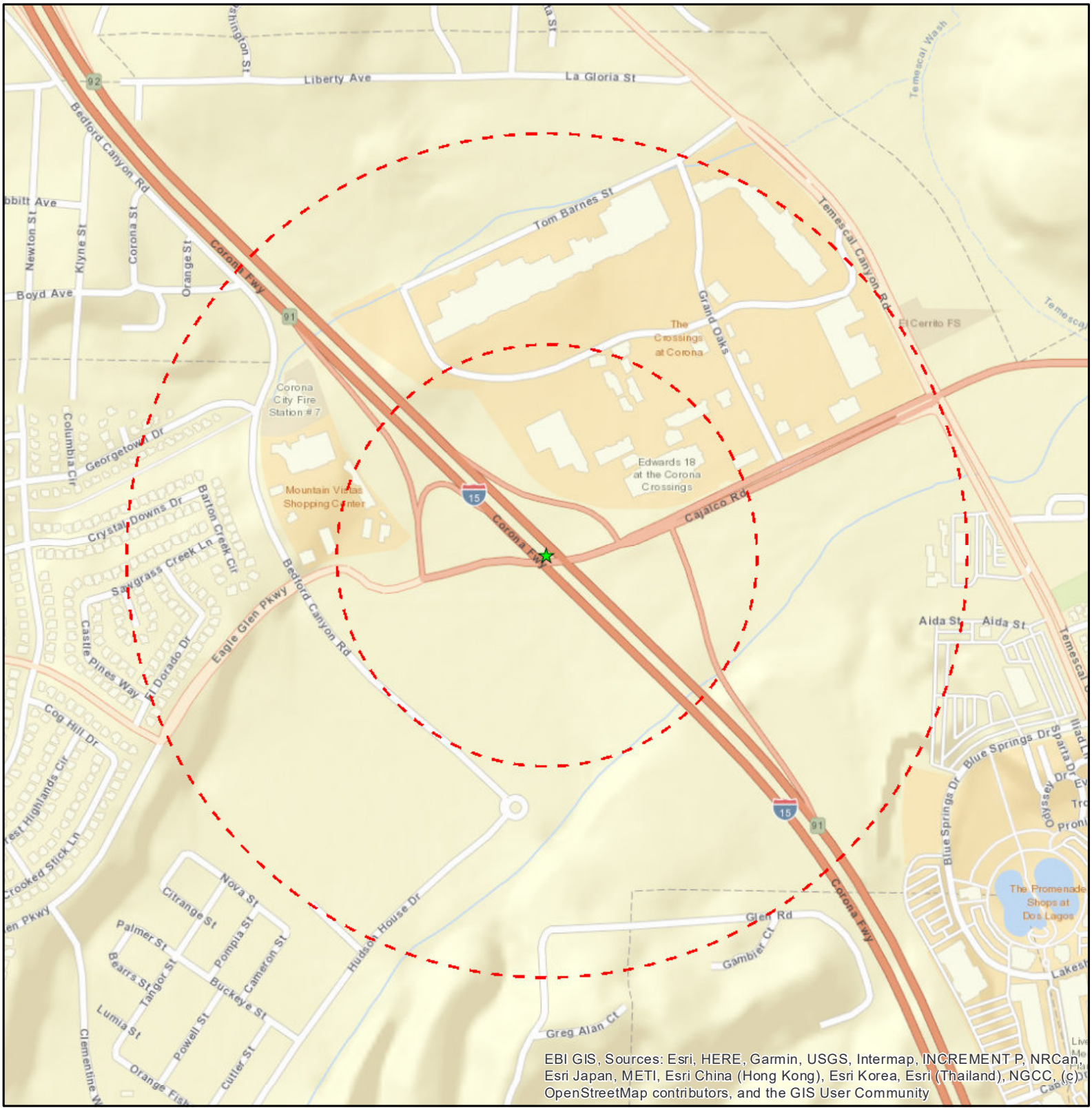
7.	View of a portion of the northwest adjacent property.



8.	View of a portion of the northwest adjacent property.

APPENDIX B

FIGURES



Legend

★ Project Site

Site Radius at ¼ and ½ mile

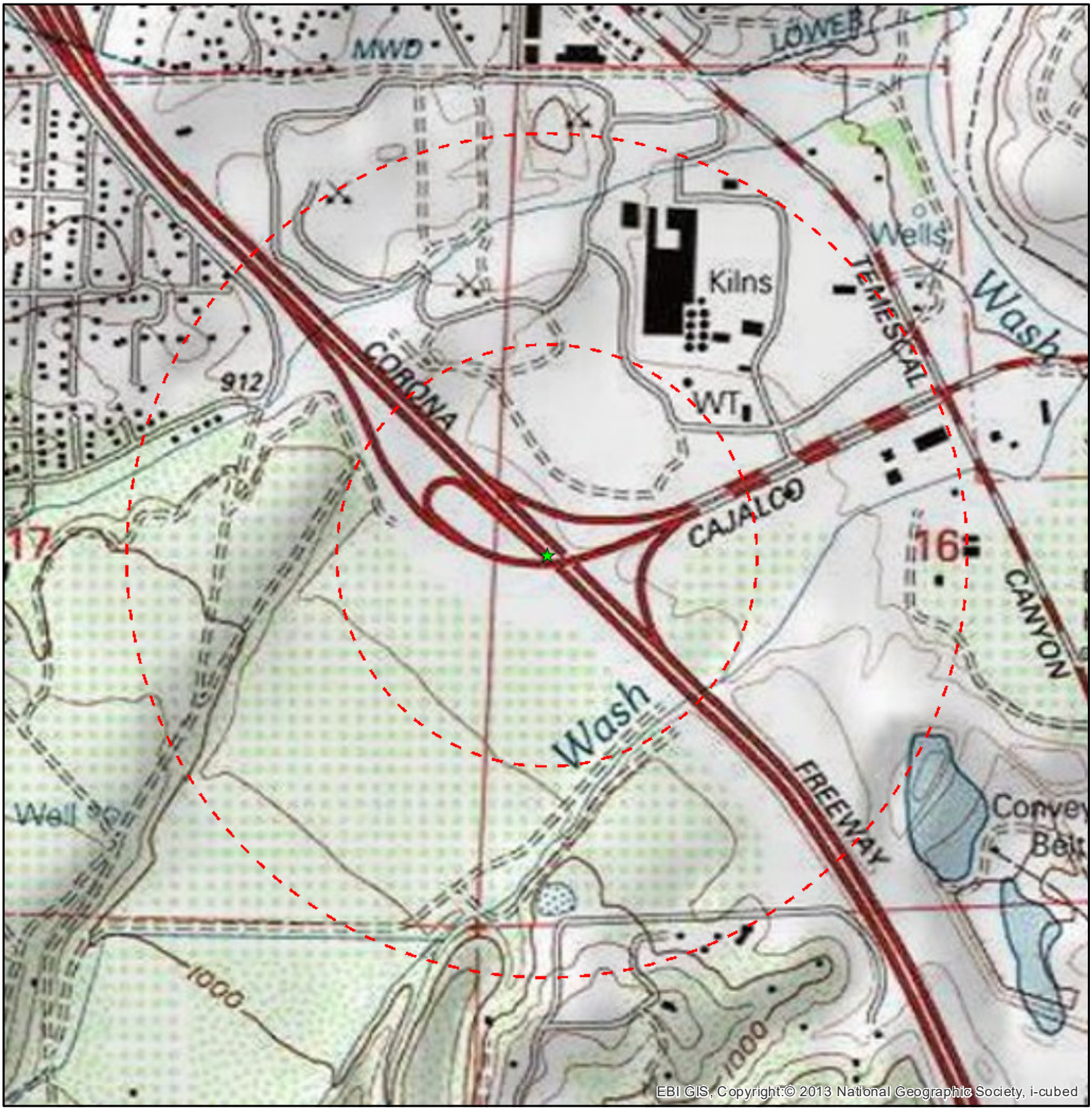
Date: 5/30/2019

Figure 1: Site Location Map

BEDFORD MARKETPLACE - ARANTINE HILLS TRACT 8
INTERSECTIONS OF EAGLE GLEN PARKWAY / CAJALCO ROAD / BEDFORD CANYON RO
CORONA, CA 92883

PN: 1119003602

EBI Consulting
environmental | engineering | due diligence



Legend

★ Project Site

Site Radius at ¼ and ½ mile

USGS 24K Quad: Corona South, CA 1986

Date: 6/11/2019

Figure 2 - Topographic Map

BEDFORD MARKETPLACE - ARANTINE HILLS TRACT 8
INTERSECTIONS OF EAGLE GLEN PARKWAY / CAJALCO ROAD / BEDFORD CANYON RO
CORONA, CA 92883

PN: 1119003602

EBI Consulting
environmental | engineering | due diligence



FIGURE 3 – SITE PLAN

N

Not to scale



FIGURE 4 – TAX MAP

N

Not to scale

APPENDIX C

PRE-SURVEY QUESTIONNAIRE AND OTHER RELEVANT DOCUMENTATION

ESA AAI USER QUESTIONNAIRE (ASTM E 1527-13)

Subject Property Name: Bedford Marketplace EBI Project #: TBD

Address: Intersections of Eagle Glen Pkwy/Cajalco Road/Bedford Canyon Road and I-15

1. Are you aware of any environmental cleanup liens against the Subject Property that are filed or recorded under federal, tribal, state or local law?

   Yes / No / Unknown / Not Applicable

   If yes, please attach a copy.

2. Are you aware of any Activity and Use Limitations (AULs), such as engineering controls, land use restrictions or institutional controls that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law?

   Yes / No / Unknown / Not Applicable

   If yes, please attach a copy.

3. As the user of this ESA do you have any specialized knowledge or experience related to the Subject Property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the Subject Property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business? Or, do you have documentation (i.e., Phase I ESAs, Phase II subsurface investigations, Tank Removal reports, remedial reports, asbestos sampling and/or abatement reports, lead-based paint sampling and/or abatement reports, etc.) for the Subject Property that may be relevant to the Phase I ESA?

   Yes / No / Unknown / Not Applicable

   Comments: Affiliated with ownership of The Eagle Glen Shopping Center immediately across Eagle Glen Pkwy.

4. Does the purchase price being paid for this Subject Property reasonably reflect the fair market value of the Subject Property?

   Yes / No / Unknown / Not Applicable

   If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the Subject Property?

   Yes / No

   Comments: _____

ESA AAI USER QUESTIONNAIRE (ASTM E 1527-13)

5. Are you aware of commonly known or reasonably ascertainable information about the Subject Property that would help the environmental professional to identify conditions indicative of release or threatened releases? For example, as user,
   a. Do you know the past uses of the Subject Property?
   b. Do you know the specific chemicals that are present or once were present at the Subject Property?
   c. Do you know of spills or other chemical releases that have taken place at the Subject Property?
   d. Do you know of any environmental cleanups that have taken place at the Subject Property?

   Comments: None

   Please attach copies of previous environmental reports prepared for the Subject Property. None

6. As the user of this ESA, based on your knowledge and experience related to the Subject Property are there any obvious indicators that point to the presence or likely presence of contamination at the Subject Property?

   Yes / No / Unknown / Not Applicable

   Comments: _____

Please be sure to attach copies of documentation, as available.

Completed by:

Name _____ Title _____

Company Name _____ Date _____

FEET
0 50 100 200
0 1/2 1 2
INCHES

EAGLE GLEN PARKWAY / CAJALCO ROAD

BEDFORD CYN. RD.

SITE ENTRANCE

EXISTING F.H.

ACCESS ROAD

TRAIL/ACCESS ROAD

LANDSCAPE SETBACK

COMMERCIAL–ARANTINE
8.35 AC NET
10.03 GROSS

COMMERCIAL–RCTC
12.23 AC NET
18.13 AC GROSS

BEDFORD CANYON RD.

LOT LINE ADJUSTMENT REQUIRED

BASIN/LIFT STATION ACCESS

24' EMERGENCY ACCESS

15' ACCESS

FUTURE SCE SWITH STATION

PAD ELEV.=921

FUTURE BRIDGE

OPEN SPACE
5.9 AC NET
(BASIN AREA 1.5 AC)

BASIN

INTERSTATE 15

PREPARED BY:

HUNSAKER & ASSOCIATES
I R V I N E , I N C .
PLANNING • ENGINEERING • SURVEYING
Three Hughes • Irvine, CA 92618
FX: (949) 583-0759 • PH: (949) 583-1010

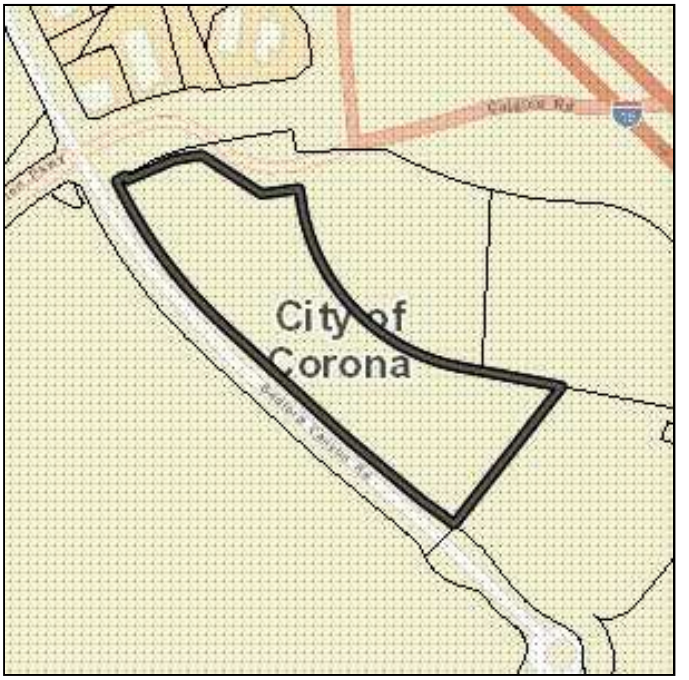
AREA BREAKDOWN
BEDFORD MARKET PLACE
08/21/2017

WO: 4209–1

Riverside County Parcel Report

APN(s) 279-240-021

MAPS/IMAGES



PARCEL

APN	279-240-021-7
Previous APN	279-240-021 came from 279-190-004
Owners	Not Available Online
Address	279-240-021 NOT AVAILABLE
Mailing Address	279-240-021 95 ENTERPRISES STE 325 ALISO VIEJO CA 92656
Legal Description	279-240-021 Recorded Book/Page: MB 456/23 Subdivision Name: TR 36294 Lot/Parcel: 8 Block: Tract Number: 36294
Lot Size	279-240-021 10.03
Property Characteristics	279-240-021 Year Constructed: 0000 Baths: 0.00 Bedrooms: 0

Construction Type: SPECIAL
Garage Type: CONSTRUCTION
Property Area (sq ft): 0
Roof Type: UNKNOWN
Stories:
Pool: NO
Central Cool: NO
Central Heat: NO

Supervisorial District	KAREN SPIEGEL, DISTRICT 2
City Boundary	CORONA
Land Use Designations	CITY
Zoning Classifications (ORD. 348)	CONTACT THE CITY FOR MORE INFORMATION

PLUS PERMITS & CASES

Administrative Cases

Case	Case Description	Status
N/A	N/A	N/A

Building and Safety Cases

Case	Case Description	Status
182578	AGRI IRRIG PUMP 10 HP	FINAL

Code Cases

Case	Case Description	Status
N/A	N/A	N/A

Fire Cases

Case	Case Description	Status
N/A	N/A	N/A

Planning Cases

Case	Case Description	Status
LLA04132	ADJUST LINE FOR PCL A TO BE ANNEXED TO CITY/CORONA	APPROVED

Survey Cases

Case	Case Description	Status
MAP36294		ISSUED
MAP37030		ISSUED

Transportation Cases

Case	Case Description	Status
N/A	N/A	N/A

DEPARTMENT of ENVIRONMENTAL HEALTH PERMITS

Septic Permits

Record Id	Application Date	Plan Check Approved Date	Final Inspection Date	Approved Date
N/A	N/A	N/A	N/A	N/A

Well Water Permits

Record Id	PE	Permit Paid Date	Permit Approved Date	Well Finaled Date
N/A	N/A	N/A	N/A	N/A

* DISCLAIMER *

Maps, permit information and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

APPENDIX D

PROFESSIONAL QUALIFICATIONS

EBI Consulting
environmental | engineering | due diligence

Christopher Evans
Project Scientist
Playa Del Rey, CA 90292
Mobile: 805-704-1222

Summary of Experience

ALPHA ENVIRONMENTAL

Project Environmental Geologist- *Dec 2014 – October 2018*

- Performed numerous Phase I ESA and TSA reports while conforming to current ASTM Standards
- Proficient in analyzing EDR documents (Radius Map Report, Lightbox, Sanborn Maps, etc.)
- Lead project manager: excelled at supervision of allocated tasks, time management, establishing priorities, meeting deadlines; principal report reviewer
- Executed numerous site visits; performed to ASTM standards, skillful at obtaining appropriate information (i.e. tenant history, previous land use, potential RECs) via observation and/or interviews, locations include: Los Angeles, Riverside, Orange, San Bernardino, and San Diego counties, Las Vegas, NV, Phoenix, AZ, Portland OR, Seattle WA
- Savvy researcher who knows how to find and collect relevant data (i.e. building departments, public libraries, DOGGR, Geotracker, Envirostor online databases, etc.), proficient in submitting FOIA requests to appropriate agencies
- Versed in customer interaction; accomplished in client acquisition
- Experienced in Phase II ESA report writing, efficient in the development of Phase II scopes of work, knowledgeable of EPA's maximum concentration levels
- Performed sub-slab vapor sampling; installed vapor pins, collected vapor samples into Tedlar bags.
- Supervised geophysical surveys; directed survey personnel to pertinent areas of interest
- Participated in a Soil Certification project; analysis of laboratory data, report writing

UNITED STATES GEOLOGICAL SURVEY

Hydrologic Technician- *Aug 2011 – May 2013*

- Conducted detailed on-site inspections and generated comprehensive field reports
- Installed, operated, maintained six stream gaging sites; attained meticulous depth to water measurements from monitoring wells
- Served as project manager in charge of installing new monitoring site; charged with acceptance testing and implementation of new radar software, including training of end users

UNIVERSITY OF NEVADA LAS VEGAS

Graduate Assistant- *Aug 2009 – Dec 2011*

- Instructor in charge of two lab sections (20+ students per semester)
- Conceived and delivered customized instruction based on students individual requirements; set and maintained high standards while instilling confidence in students to succeed
- Demonstrated strong public speaking, communication, and leadership skills by delivering lectures and performing one on one informational sessions with students

Education

Bachelor of Science, Geology- University of Southern California, Los Angeles, CA

Professional Registrations

OSHA 40 Hour Hazwoper Certified

EBI Consulting
environmental | engineering | due diligence

Michael S. Ryniak
Program Manager
465 Shadow Mountain Dr.
Prescott, AZ 86301
Office: 928.227.4669 Mobile: 928.925.4173

SUMMARY OF EXPERIENCE

Michael S. Ryniak is an environmental scientist with more than 25 years of environmental industry experience specializing in environmental investigations and site assessments. Mr. Ryniak also has experience conducting NEPA assessments, subsurface investigations, as well as performing indoor air quality, asbestos, radon, lead paint, and lead water surveys. He has also prepared asbestos and lead paint operations and maintenance plans and moisture management plans.

Mr. Ryniak has conducted over 1,000 environmental site-acquisition assessments/due diligence assignments for a wide range of properties throughout the United States. These assessments have been performed to evaluate site conditions, potential off-site liabilities, environmental control systems, and site remediation costs in order to advise prospective buyers, current operators, and owners of potential and existing environmental concerns. Furthermore, as a supervisor, Mr. Ryniak has been responsible for the review and client technical relations for over 4,000 additional Phase I Environmental Site Assessments. Mr. Ryniak has worked with corporate environmental officers, numerous Wall Street lending institutions, legal counsel, governmental agencies, rating agencies, investment companies and real estate brokers to develop strategies for managing properties with environmental concerns.

At EBI Consulting, Mr. Ryniak provides Senior Level review and quality control of Phase I Site Assessments and Environmental Screening reports, as well as client support, managing selected client accounts. Mr. Ryniak has over five years experience concentrating on providing these services to HUD Lender clients. Additionally, Mr. Ryniak is involved in marketing outreach activities with local Arizona banks.

RELEVANT PROJECT EXPERIENCE

ENVIRONMENTAL SITE ASSESSMENTS: Mr. Ryniak has conducted ASTM Phase I Environmental Site Assessments, Environmental Site Screenings, and soil and groundwater sampling for various clients and has prepared Phase I and Phase II reports for a variety of properties located in the United States. These properties have included industrial, commercial, retail, and multi-family residential properties, as well as telecommunications sites. Mr. Ryniak has conducted assessments at numerous senior living facilities, including all levels of senior care. Mr. Ryniak has also conducted indoor air quality, radon, asbestos-containing materials, lead-based paint and lead water surveys. Mr. Ryniak participated in remedial investigation and feasibility studies for four Arizona "Superfund" sites in Phoenix and Tucson.

OPERATIONS & MAINTENANCE PLANS: Mr. Ryniak has prepared asbestos and lead paint operations and maintenance plans, and moisture management plans for a variety of commercial and multi-family residential facilities throughout the United States.

EDUCATION

Bachelor of Arts, Anthropology, University of Notre Dame
Geology Masters Degree Program, Arizona State University

Michael S. Ryniak
Program Manager

PROFESSIONAL REGISTRATIONS

EPA/AHERA Accredited and Licensed Asbestos Inspector and Management Planner
40-Hour OSHA Hazardous Worker

APPENDIX E

REGULATORY DATABASE REPORT

Bedford Marketplace - Arantine Hills Tract 8
Intersections of Eagle Glen Parkway / Cajalco Road
Corona, CA 92883

Inquiry Number: 05672537.2r
June 04, 2019

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION	PAGE
Executive Summary	ES1
Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	8
Orphan Summary	70
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting SSURGO Soil Map	A-5
Physical Setting Source Map	A-10
Physical Setting Source Map Findings	A-12
Physical Setting Source Records Searched	PSGR-1

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2019 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

INTERSECTIONS OF EAGLE GLEN PARKWAY / CAJALCO ROAD
CORONA, CA 92883

COORDINATES

Latitude (North):	33.8189400 - 33° 49' 8.18''
Longitude (West):	117.5212140 - 117° 31' 16.37''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	451763.8
UTM Y (Meters):	3742009.0
Elevation:	924 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5636469 CORONA SOUTH, CA
Version Date:	2012
East Map:	5636475 LAKE MATHEWS, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140603
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
INTERSECTIONS OF EAGLE GLEN PARKWAY / CAJALCO ROAD
CORONA, CA 92881

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	EAGLE GLEN MOBIL LLC	2261 EAGLE GLEN PKWY	EDR Hist Auto	Lower	366, 0.069, North
A2	EAGLE GLEN MOBIL	2261 EAGLE GLEN PKWY	CERS HAZ WASTE, CERS TANKS, HAZNET, CERS	Lower	366, 0.069, North
A3	EAGLE GLEN MOBIL	2261 EAGLE GLEN PKWY	UST	Lower	366, 0.069, North
B4	STATER BROS MARKETS	2243 EAGLE GLEN PKWY	CERS HAZ WASTE, HAZNET, CERS	Higher	764, 0.145, NNW
B5	STATER BROS MARKETS	2243 EAGLE GLEN PKWY	RCRA-LQG	Higher	764, 0.145, NNW
B6	EAGLE GLEN DENTAL GR	3811 BEDFORD CANYON	EDR Hist Cleaner	Higher	883, 0.167, NNW
B7	CORKY'S KITCHEN AND	3811 BEDFORD CANYON	DRYCLEANERS, CERS	Higher	883, 0.167, NNW
B8	EAGLE DRY CLEANERS	3811 BEDFORD CANYON	DRYCLEANERS	Higher	883, 0.167, NNW
9	PACIFIC CLAY PRODUCT	20325 TEMESCAL CANYO	ENVIROSTOR, CPS-SLIC, CHMIRS, CERS	Lower	3428, 0.649, NE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System
US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

EXECUTIVE SUMMARY

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---------- State Response Sites

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System

State and tribal leaking storage tank lists

LUST ---------- Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST ---------- Leaking Underground Storage Tanks on Indian Land
CPS-SLIC ---------- Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST ---------- Underground Storage Tank Listing
AST ---------- Aboveground Petroleum Storage Tank Facilities
INDIAN UST ---------- Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

VCP ---------- Voluntary Cleanup Program Properties
INDIAN VCP ---------- Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS ---------- Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---------- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT ---------- Waste Management Unit Database
SWRCY ---------- Recycler Database
HAULERS ---------- Registered Waste Tire Haulers Listing
INDIAN ODI ---------- Report on the Status of Open Dumps on Indian Lands
ODI ---------- Open Dump Inventory
DEBRIS REGION 9 ---------- Torres Martinez Reservation Illegal Dump Site Locations
IHS OPEN DUMPS ---------- Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ---------- Delisted National Clandestine Laboratory Register
HIST Cal-Sites ---------- Historical Calsites Database

SCH ---- School Property Evaluation Program
CDL ---- Clandestine Drug Labs
Toxic Pits ---- Toxic Pits Cleanup Act Sites
US CDL ---- National Clandestine Laboratory Register
PFAS ---- PFAS Contamination Site Location Listing

Local Lists of Registered Storage Tanks

SWEEPS UST ---- SWEEPS UST Listing
HIST UST ---- Hazardous Substance Storage Container Database
CA FID UST ---- Facility Inventory Database

Local Land Records

LIENS ---- Environmental Liens Listing
LIENS 2 ---- CERCLA Lien Information
DEED ---- Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ---- Hazardous Materials Information Reporting System
CHMIRS ---- California Hazardous Material Incident Report System
LDS ---- Land Disposal Sites Listing
MCS ---- Military Cleanup Sites Listing

Other Ascertainable Records

RCRA NonGen / NLR ---- RCRA - Non Generators / No Longer Regulated
FUDS ---- Formerly Used Defense Sites
DOD ---- Department of Defense Sites
SCRD DRYCLEANERS ---- State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR ---- Financial Assurance Information
EPA WATCH LIST ---- EPA WATCH LIST
2020 COR ACTION ---- 2020 Corrective Action Program List
TSCA ---- Toxic Substances Control Act
TRIS ---- Toxic Chemical Release Inventory System
SSTS ---- Section 7 Tracking Systems
ROD ---- Records Of Decision
RMP ---- Risk Management Plans
RAATS ---- RCRA Administrative Action Tracking System
PRP ---- Potentially Responsible Parties
PADS ---- PCB Activity Database System
ICIS ---- Integrated Compliance Information System
FTTS ---- FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS ---- Material Licensing Tracking System
COAL ASH DOE ---- Steam-Electric Plant Operation Data
COAL ASH EPA ---- Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER ---- PCB Transformer Registration Database
RADINFO ---- Radiation Information Database
HIST FTTS ---- FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS ---- Incident and Accident Data
CONSENT ---- Superfund (CERCLA) Consent Decrees
INDIAN RESERV ---- Indian Reservations
FUSRAP ---- Formerly Utilized Sites Remedial Action Program

UMTRA ---- Uranium Mill Tailings Sites
LEAD SMELTERS ---- Lead Smelter Sites
US AIRS ---- Aerometric Information Retrieval System Facility Subsystem
US MINES ---- Mines Master Index File
ABANDONED MINES ---- Abandoned Mines
FINDS ---- Facility Index System/Facility Registry System
UXO ---- Unexploded Ordnance Sites
ECHO ---- Enforcement & Compliance History Information
DOCKET HWC ---- Hazardous Waste Compliance Docket Listing
FUELS PROGRAM ---- EPA Fuels Program Registered Listing
CA BOND EXP. PLAN ---- Bond Expenditure Plan
Cortese ---- "Cortese" Hazardous Waste & Substances Sites List
CUPA Listings ---- CUPA Resources List
EMI ---- Emissions Inventory Data
ENF ---- Enforcement Action Listing
Financial Assurance ---- Financial Assurance Information Listing
HAZNET ---- Facility and Manifest Data
ICE ---- ICE
HIST CORTESE ---- Hazardous Waste & Substance Site List
HWP ---- EnviroStor Permitted Facilities Listing
HWT ---- Registered Hazardous Waste Transporter Database
MINES ---- Mines Site Location Listing
MWMP ---- Medical Waste Management Program Listing
NPDES ---- NPDES Permits Listing
PEST LIC ---- Pesticide Regulation Licenses Listing
PROC ---- Certified Processors Database
Notify 65 ---- Proposition 65 Records
UIC ---- UIC Listing
UIC GEO ---- UIC GEO (GEOTRACKER)
WASTEWATER PITS ---- Oil Wastewater Pits Listing
WDS ---- Waste Discharge System
MILITARY PRIV SITES ---- MILITARY PRIV SITES (GEOTRACKER)
PROJECT ---- PROJECT (GEOTRACKER)
WDR ---- Waste Discharge Requirements Listing
CIWQS ---- California Integrated Water Quality System
CERS ---- CERS
NON-CASE INFO ---- NON-CASE INFO (GEOTRACKER)
WIP ---- Well Investigation Program Case List
OTHER OIL GAS ---- OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS ---- PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT ---- SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ ---- Well Stimulation Project (GEOTRACKER)

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP ---- EDR Proprietary Manufactured Gas Plants

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF ---- Recovered Government Archive Solid Waste Facilities List

EXECUTIVE SUMMARY

RGA LUST ---------- Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Federal RCRA generators list

RCRA-LQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

A review of the RCRA-LQG list, as provided by EDR, and dated 03/25/2019 has revealed that there is 1 RCRA-LQG site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
STATER BROS MARKETS EPA ID:: CAL000334464	2243 EAGLE GLEN PKWY	NNW 1/8 - 1/4 (0.145 mi.)	B5	57

State- and tribal - equivalent CERCLIS

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 01/28/2019 has revealed that there is 1 ENVIROSTOR site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
PACIFIC CLAY PRODUCT	***20325 TEMESCAL CANYO***	***NE 1/2 - 1 (0.649 mi.)***	***9***	***62***

Facility Id: 33320001
Status: Refer: Other Agency

State and tribal registered storage tank lists

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the State Water Resources Control Board's Hazardous Substance Storage Container Database.

A review of the UST list, as provided by EDR, has revealed that there is 1 UST site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
EAGLE GLEN MOBIL	2261 EAGLE GLEN PKWY	N 0 - 1/8 (0.069 mi.)	A3	46

Database: RIVERSIDE CO. UST, Date of Government Version: 01/29/2019
Database: UST, Date of Government Version: 12/10/2018
Facility Id: FA0024172

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Hazardous waste / Contaminated Sites

CERS HAZ WASTE: List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

A review of the CERS HAZ WASTE list, as provided by EDR, and dated 04/09/2019 has revealed that there are 2 CERS HAZ WASTE sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
STATER BROS MARKETS	***2243 EAGLE GLEN PKWY***	***NNW 1/8 - 1/4 (0.145 mi.)***	***B4***	***46***

Lower Elevation	Address	Direction / Distance	Map ID	Page
EAGLE GLEN MOBIL	***2261 EAGLE GLEN PKWY***	***N 0 - 1/8 (0.069 mi.)***	***A2***	***8***

Local Lists of Registered Storage Tanks

CERS TANKS: List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

A review of the CERS TANKS list, as provided by EDR, and dated 04/09/2019 has revealed that there is 1 CERS TANKS site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
EAGLE GLEN MOBIL	***2261 EAGLE GLEN PKWY***	***N 0 - 1/8 (0.069 mi.)***	***A2***	***8***

Other Ascertainable Records

DRYCLEANERS: A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaners' agents; linen supply; coin-operated laundries and cleaning; drycleaning plants except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

A review of the DRYCLEANERS list, as provided by EDR, has revealed that there are 2 DRYCLEANERS sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
CORKY'S KITCHEN AND	***3811 BEDFORD CANYON***	***NNW 1/8 - 1/4 (0.167 mi.)***	***B7***	***58***
Database: DRYCLEAN SOUTH COAST, Date of Government Version: 03/19/2019				
EAGLE DRY CLEANERS	3811 BEDFORD CANYON	NNW 1/8 - 1/4 (0.167 mi.)	B8	62
Database: DRYCLEANERS, Date of Government Version: 03/01/2019 EPA Id: CAL000289787				

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR Hist Auto: EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR Hist Auto list, as provided by EDR, has revealed that there is 1 EDR Hist Auto site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
EAGLE GLEN MOBIL LLC	2261 EAGLE GLEN PKWY	N 0 - 1/8 (0.069 mi.)	A1	8

EDR Hist Cleaner: EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR Hist Cleaner list, as provided by EDR, has revealed that there is 1 EDR Hist Cleaner site within approximately 0.25 miles of the target property.

EXECUTIVE SUMMARY

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
EAGLE GLEN DENTAL GR	3811 BEDFORD CANYON	NNW 1/8 - 1/4 (0.167 mi.)	B6	58

EXECUTIVE SUMMARY

There were no unmapped sites in this report.

OVERVIEW MAP - 05672537.2R



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA

100-year flood zone

500-year flood zone

National Wetland Inventory

State Wetlands

Areas of Concern

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Bedford Marketplace - Arantine Hills Tract 8	CLIENT:	EBI Consulting
ADDRESS:	Intersections of Eagle Glen Parkway / Cajalco Road Corona CA 92883	CONTACT:	Production Manager
LAT/LONG:	33.81894 / 117.521214	INQUIRY #:	05672537.2r
		DATE:	June 04, 2019 11:38 am

Copyright © 2019 EDR, Inc. © 2015 TomTom Rel. 2015.

DETAIL MAP - 05672537.2R



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/16 1/8 1/4 Miles

- Indian Reservations BIA
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Bedford Marketplace - Arantine Hills Tract 8	CLIENT:	EBI Consulting
ADDRESS:	Intersections of Eagle Glen Parkway / Cajalco Road Corona CA 92883	CONTACT:	Production Manager
LAT/LONG:	33.81894 / 117.521214	INQUIRY #:	05672537.2r
		DATE:	June 04, 2019 11:39 am

Copyright © 2019 EDR, Inc. © 2015 TomTom Rel. 2015.

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	1.000		0	0	0	0	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	1	NR	NR	NR	1
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.125		0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	1	NR	1
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		1	0	NR	NR	NR	1
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
CERS HAZ WASTE	0.250		1	1	NR	NR	NR	2
US CDL	TP		NR	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
CERS TANKS	0.250		1	0	NR	NR	NR	1
Local Land Records								
LIENS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
CHMIRS	0.250		0	0	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0
MCS	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	TP		NR	NR	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	TP		NR	NR	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	2	NR	NR	NR	2

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EMI	TP		NR	NR	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
HAZNET	TP		NR	NR	NR	NR	NR	0
ICE	TP		NR	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	TP		NR	NR	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
PEST LIC	TP		NR	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
UIC GEO	TP		NR	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
MILITARY PRIV SITES	TP		NR	NR	NR	NR	NR	0
PROJECT	TP		NR	NR	NR	NR	NR	0
WDR	TP		NR	NR	NR	NR	NR	0
CIWQS	TP		NR	NR	NR	NR	NR	0
CERS	TP		NR	NR	NR	NR	NR	0
NON-CASE INFO	TP		NR	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
OTHER OIL GAS	TP		NR	NR	NR	NR	NR	0
PROD WATER PONDS	TP		NR	NR	NR	NR	NR	0
SAMPLING POINT	TP		NR	NR	NR	NR	NR	0
WELL STIM PROJ	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.250		1	0	NR	NR	NR	1
EDR Hist Cleaner	0.250		0	1	NR	NR	NR	1
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.500		0	0	0	NR	NR	0
RGA LUST	0.500		0	0	0	NR	NR	0
- Totals --		0	4	5	0	1	0	10

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1 **EAGLE GLEN MOBIL LLC** **EDR Hist Auto** **1021832581**
North **2261 EAGLE GLEN PKWY** **N/A**
< 1/8 **CORONA, CA 92883**
0.069 mi.
366 ft. **Site 1 of 3 in cluster A**

Relative: EDR Hist Auto
Lower

Actual: Year: Name: Type:
914 ft.

Year:	Name:	Type:
2006	EAGLE GLEN MOBILE	Gasoline Service Stations
2007	EAGLE GLEN MOBILE	Gasoline Service Stations
2008	EAGLE GLEN MOBILE	Gasoline Service Stations
2008	EAGLE GLEN MOBILE	Gasoline Service Stations
2009	EAGLE GLEN MOBIL LLC	Gasoline Service Stations
2010	EAGLE GLEN MOBIL LLC	Gasoline Service Stations
2011	EAGLE GLEN MOBIL LLC	Gasoline Service Stations
2012	EAGLE GLEN MOBIL LLC	Gasoline Service Stations
2013	EAGLE GLEN MOBIL LLC	Gasoline Service Stations
2014	EAGLE GLEN MOBIL LLC	Gasoline Service Stations

A2 **EAGLE GLEN MOBIL** **CERS HAZ WASTE** **S113142685**
North **2261 EAGLE GLEN PKWY** **CERS TANKS** **N/A**
< 1/8 **CORONA, CA 92883** **HAZNET**
0.069 mi. **CERS**
366 ft. **Site 2 of 3 in cluster A**

Relative: CERS HAZ WASTE:
Lower
Site ID: 391913
Actual: CERS ID: 10404193
914 ft. CERS Description: Hazardous Waste Generator

Violations:
Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-07-2016
Citation: 23 CCR 16 2631(g), 2632(c)(2)(A) & (B) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2631(g), 2632(c)(2)(A) & (B)
Violation Description: Failure of the double-walled interstitial space of the tank to be continuously monitored with an audible and visual alarm.
Violation Notes: Returned to compliance on 11/02/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-09-2015
Citation: 23 CCR 16 2638 - California Code of Regulations, Title 23, Chapter 16, Section(s) 2638
Violation Description: Failure to test leak detection equipment as required every 12 months (VPH, sensor, LLD, ATG, etc.) and/or submit monitoring system certification to the CUPA within 30 days of completion of the test
Violation Notes: Returned to compliance on 09/13/2017.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil

EAGLE GLEN MOBIL (Continued) **S113142685**

Violation Date:	07-09-2015
Citation:	23 CCR 16 2636(f)(1) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)(1)
Violation Description:	Failure of the double wall pressurized piping in the turbine sump to be continuously monitored with a system that activates an audible and visual alarm or restricts or stops flow at dispenser when a leak is detected.
Violation Notes:	Returned to compliance on 11/05/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-06-2017
Citation:	HSC 6.7 25290.2(d) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.2(d)
Violation Description:	Failure of a UST system installed on or after July 1, 2003 and before July 1, 2004 to be designed and constructed with a monitoring system capable of detecting the entry of the hazardous substance stored in the primary containment into the secondary containment and capable of detecting water intrusion into the secondary containment.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	05-22-2015
Citation:	HSC 6.95 25505(a)(4) - California Health and Safety Code, Chapter 6.95, Section(s) 25505(a)(4)
Violation Description:	Failure to provide initial and annual training to all employees in safety procedures in the event of a release or threatened release of a hazardous material or failure to document and maintain training records for a minimum of three years.
Violation Notes:	Returned to compliance on 04/08/2016. Provide annual employee training documents.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016
Citation:	HSC 6.7 25290.1(d) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(d)
Violation Description:	Failure of a UST system installed on or after July 1, 2004 to be designed and constructed with a monitoring system capable of detecting the entry of the liquid or vapor-phase of the hazardous substance stored in the primary containment into the secondary containment and capable of detecting water intrusion into the secondary containment.
Violation Notes:	Returned to compliance on 11/02/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS

EAGLE GLEN MOBIL (Continued) **S113142685**

Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-06-2017
Citation:	HSC 6.7 25290.1(d) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(d)
Violation Description:	Failure of a UST system installed on or after July 1, 2004 to be designed and constructed with a monitoring system capable of detecting the entry of the liquid or vapor-phase of the hazardous substance stored in the primary containment into the secondary containment and capable of detecting water intrusion into the secondary containment.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS

Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	HSC 6.7 25291 - California Health and Safety Code, Chapter 6.7, Section(s) 25291
Violation Description:	Failure to maintain under-dispenser containment, sumps, and/or other secondary containment in good condition and/or free of debris/liquid.
Violation Notes:	Returned to compliance on 08/08/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS

Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016
Citation:	23 CCR 16 2636(f)(2) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)(2)
Violation Description:	Failure of the line leak detector (LLD) monitoring pressurized piping to meet one or more of the following requirements:Monitor at least hourly.Be capable of detecting a release of 3.0 gallons per hour at 10 p.s.i.g. Restrict or shut off the flow of product through the piping when a leak is detected.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS

Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	05-22-2015
Citation:	HSC 6.95 25504(a) - California Health and Safety Code, Chapter 6.95, Section(s) 25504(a)
Violation Description:	Failure to complete and/or submit hazardous material inventory forms for all reportable hazardous materials on site.
Violation Notes:	Returned to compliance on 04/08/2016. Add 180 gallon waste oil tank.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS

Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	06-26-2014

EAGLE GLEN MOBIL (Continued) **S113142685**

Citation:	HSC 6.7 25291 - California Health and Safety Code, Chapter 6.7, Section(s) 25291
Violation Description:	Failure to maintain under-dispenser containment, sumps, and/or other secondary containment in good condition and/or free of debris/liquid.
Violation Notes:	Returned to compliance on 07/10/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	23 CCR 16 2665 - California Code of Regulations, Title 23, Chapter 16, Section(s) 2665
Violation Description:	Failure of the overfill prevention system to meet one of the following requirements: 1. Alert the transfer operator when the tank is 90 percent full by restricting the flow into the tank or triggering an audible and visual alarm; or 2. Restrict delivery of flow to the tank at least 30 minutes before the tank overfills, provided the restriction occurs when the tank is filled to no more than 95 percent of capacity; and activate an audible alarm at least five minutes before the tank overfills; or 3. Provide positive shut-off of flow to the tank when the tank is filled to no more than 95 percent of capacity; or 4. Provide positive shut-off of flow to the tank so that none of the fittings located on the top of the tank are exposed to product due to overfilling.
Violation Notes:	Returned to compliance on 11/05/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	06-08-2018
Citation:	Un-Specified
Violation Description:	Business Plan Program - Operations/Maintenance - General Local Ordinance
Violation Notes:	Spill kit is missing
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	HSC 6.7 25284.2 - California Health and Safety Code, Chapter 6.7, Section(s) 25284.2
Violation Description:	Failure to test the spill bucket annually.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	HSC 6.7 25290.1(e) - California Health and Safety Code, Chapter 6.7,

EAGLE GLEN MOBIL (Continued) **S113142685**

	Section(s) 25290.1(e)
Violation Description:	Failure to maintain the interstitial space under constant vacuum, pressure, or hydrostatic such that a breach in the primary or secondary containment is detected before the liquid or vapor phase of the hazardous substance stored in the UST tank is released into the environment. (Product Tight)
Violation Notes:	Returned to compliance on 11/05/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	05-22-2015
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Operations/Maintenance - General
Violation Notes:	Returned to compliance on 04/08/2016. Obtain spill kit to contain 180 gallons of product.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	23 CCR 16 2636(f) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)
Violation Description:	Failure to continuously monitor the interstitial space of the tank, piping and/or sumps sump such that the leak detection activates an audible/visual alarm when a leak is detected.
Violation Notes:	Returned to compliance on 08/08/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-05-2018
Citation:	23 CCR 16 2632(c)(2)(B), 2634(d)(1)(a), 2636(f)(1) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2632(c)(2)(B), 2634(d)(1)(a), 2636(f)(1)
Violation Description:	Failure of the leak detection equipment to have an audible and visual alarm as required.
Violation Notes:	Returned to compliance on 07/10/2018.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-05-2018
Citation:	HSC 6.7 25290.1(e) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(e)
Violation Description:	Failure to maintain the interstitial space such that a breach in the primary or secondary containment is detected before the liquid or vapor phase of the hazardous substance stored in the UST tank is

EAGLE GLEN MOBIL (Continued) **S113142685**

	released into the environment, i.e., vapor, pressure, hydrostatic (VPH) monitoring.
Violation Notes:	Returned to compliance on 07/10/2018.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016
Citation:	23 CCR 16 2666(c) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2666(c)
Violation Description:	Failure of the line leak detector (LLD) monitoring single-walled pressurized piping to shut down the pump when a leak is detected or when the LLD fails or is disconnected.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016
Citation:	HSC 6.7 25290.1(c)(3), 25290.2(c)(3) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(c)(3), 25290.2(c)(3)
Violation Description:	Failure to keep water out of the secondary containment of UST systems installed on or after July 1, 2003 and before July 1, 2004, or on or after July 1, 2004.
Violation Notes:	Returned to compliance on 11/02/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016
Citation:	HSC 6.7 25292.1(a) - California Health and Safety Code, Chapter 6.7, Section(s) 25292.1(a)
Violation Description:	Failure to operate the UST system to prevent unauthorized releases including leaks, spills, and/or overfills.
Violation Notes:	Returned to compliance on 11/02/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	06-26-2014
Citation:	HSC 6.7 25290.1(e) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(e)
Violation Description:	Failure to maintain the interstitial space under constant vacuum, pressure, or hydrostatic such that a breach in the primary or secondary containment is detected before the liquid or vapor phase of the hazardous substance stored in the UST tank is released into the environment. (Product Tight)
Violation Notes:	Returned to compliance on 07/10/2015.
Violation Division:	Riverside County Department of Env Health

EAGLE GLEN MOBIL (Continued) **S113142685**

Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-09-2015
Citation: 23 CCR 16 2636(f)(5) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)(5)
Violation Description: Failure to maintain all product piping outside the dispenser to be fail-safe and shut down the pump when a leak is detected and the monitoring system shuts down the pump or flow restriction occurs when a leak is detected in the under dispenser containment.
Violation Notes: Returned to compliance on 08/08/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-06-2017
Citation: HSC 6.7 25281.5(b)(3) - California Health and Safety Code, Chapter 6.7, Section(s) 25281.5(b)(3)
Violation Description: Failure to meet one or more exemption requirements for emergency generator tank system unburied fuel piping: Conduct daily visual inspections each time the tank is operated. Conduct daily visual inspections at least monthly. Maintain a log of inspection results for review by the CUPA.
Violation Notes: Returned to compliance on 09/13/2017.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-07-2016
Citation: 40 CFR 1 265.171 - U.S. Code of Federal Regulations, Title 40, Chapter 1, Section(s) 265.171
Violation Description: Failure to accumulate hazardous waste in a container that is in good condition.
Violation Notes: Returned to compliance on 09/13/2017.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-04-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-08-2018
Violations Found: Yes

EAGLE GLEN MOBIL (Continued) **S113142685**

Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-06-2017
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-07-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-07-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 09-13-2013
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-26-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-05-2018
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health

EAGLE GLEN MOBIL (Continued) **S113142685**

Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-09-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 07-13-2018
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 11-03-2015
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 05-22-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 06-26-2014
Violations Found: Yes
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-30-2015
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Eagle Glen Mobil File Review/ Inspection
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

EAGLE GLEN MOBIL (Continued) **S113142685**

Eval General Type: Other/Unknown
Eval Date: 07-24-2013
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 09-30-2015
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 11-02-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Enforcement Action:
Site ID: 391913
Site Name: Eagle Glen Mobil
Site Address: 2261 EAGLE GLEN PKWY
Site City: CORONA
Site Zip: 92883
Enf Action Date: 05-22-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Corona Fire Department
Enf Action Program: HMRRP
Enf Action Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Site Address: 2261 EAGLE GLEN PKWY
Site City: CORONA
Site Zip: 92883
Enf Action Date: 06-26-2014
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Riverside County Department of Env Health
Enf Action Program: UST
Enf Action Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Site Address: 2261 EAGLE GLEN PKWY

EAGLE GLEN MOBIL (Continued) **S113142685**

Site City:	CORONA
Site Zip:	92883
Enf Action Date:	07-09-2015
Enf Action Type:	Notice of Violation (Unified Program)
Enf Action Description:	Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:	Not reported
Enf Action Division:	Riverside County Department of Env Health
Enf Action Program:	UST
Enf Action Source:	CERS

Coordinates:

Site ID:	391913
Facility Name:	Eagle Glen Mobil
Env Int Type Code:	HMBP
Program ID:	10404193
Coord Name:	Not reported
Ref Point Type Desc:	Center of a facility or station.
Latitude:	33.821500
Longitude:	-117.521740

Affiliation:

Affiliation Type Desc:	Legal Owner
Entity Name:	EMAD WASIF
Entity Title:	Not reported
Affiliation Address:	2261 Eagle Glen Pkwy
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92883
Affiliation Phone:	(951) 520-1990

Affiliation Type Desc:	Environmental Contact
Entity Name:	EMAD WASIF
Entity Title:	Not reported
Affiliation Address:	2261 Eagle Glen Pkwy
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92883
Affiliation Phone:	Not reported

Affiliation Type Desc:	Identification Signer
Entity Name:	EMAD WASIF
Entity Title:	OWNER / OPERATOR
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Operator
Entity Name:	EMAD WASIF
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported

EAGLE GLEN MOBIL (Continued) **S113142685**

Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(951) 316-1096
Affiliation Type Desc:	Parent Corporation
Entity Name:	EAGLE GLEN MOBIL
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	2261 Eagle Glen Pkwy
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92883
Affiliation Phone:	Not reported
Affiliation Type Desc:	Property Owner
Entity Name:	EAGLE GLEN MOBIL
Entity Title:	Not reported
Affiliation Address:	2261 Eagle Glen Pkwy
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92883
Affiliation Phone:	(951) 520-1990
Affiliation Type Desc:	UST Permit Applicant
Entity Name:	EMAD WASIF
Entity Title:	OWNER / OPERATOR
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(951) 520-1990
Affiliation Type Desc:	UST Property Owner Name
Entity Name:	EAGLE GLEN MOBIL

EAGLE GLEN MOBIL (Continued) **S113142685**

Entity Title: Not reported
Affiliation Address: 2261 EAGLE GLEN PKWY
Affiliation City: CORONA
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 92883
Affiliation Phone: (951) 520-1990

Affiliation Type Desc: UST Tank Operator
Entity Name: EMAD WASIF
Entity Title: Not reported
Affiliation Address: 2261 EAGLE GLEN PKWY
Affiliation City: CORONA
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 92883
Affiliation Phone: (951) 520-1990

Affiliation Type Desc: Document Preparer
Entity Name: Dianne Fowler
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: UST Tank Owner
Entity Name: EAGLE GLEN MOBIL
Entity Title: Not reported
Affiliation Address: 2261 EAGLE GLEN PKWY
Affiliation City: CORONA
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 92883
Affiliation Phone: (951) 520-1990

CERS TANKS:
Facility Name: EAGLE GLEN MOBIL
Site ID: 391913
CERS ID: 10404193
CERS Description: Underground Storage Tank

Violations:
Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-07-2016
Citation: 23 CCR 16 2631(g), 2632(c)(2)(A) & (B) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2631(g), 2632(c)(2)(A) & (B)
Violation Description: Failure of the double-walled interstitial space of the tank to be continuously monitored with an audible and visual alarm.
Violation Notes: Returned to compliance on 11/02/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: UST

EAGLE GLEN MOBIL (Continued) **S113142685**

Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	23 CCR 16 2638 - California Code of Regulations, Title 23, Chapter 16, Section(s) 2638
Violation Description:	Failure to test leak detection equipment as required every 12 months (VPH, sensor, LLD, ATG, etc.) and/or submit monitoring system certification to the CUPA within 30 days of completion of the test
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	23 CCR 16 2636(f)(1) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)(1)
Violation Description:	Failure of the double wall pressurized piping in the turbine sump to be continuously monitored with a system that activates an audible and visual alarm or restricts or stops flow at dispenser when a leak is detected.
Violation Notes:	Returned to compliance on 11/05/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-06-2017
Citation:	HSC 6.7 25290.2(d) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.2(d)
Violation Description:	Failure of a UST system installed on or after July 1, 2003 and before July 1, 2004 to be designed and constructed with a monitoring system capable of detecting the entry of the hazardous substance stored in the primary containment into the secondary containment and capable of detecting water intrusion into the secondary containment.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	05-22-2015
Citation:	HSC 6.95 25505(a)(4) - California Health and Safety Code, Chapter 6.95, Section(s) 25505(a)(4)
Violation Description:	Failure to provide initial and annual training to all employees in safety procedures in the event of a release or threatened release of a hazardous material or failure to document and maintain training records for a minimum of three years.
Violation Notes:	Returned to compliance on 04/08/2016. Provide annual employee training documents.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP

EAGLE GLEN MOBIL (Continued) **S113142685**

Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-07-2016
Citation: HSC 6.7 25290.1(d) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(d)
Violation Description: Failure of a UST system installed on or after July 1, 2004 to be designed and constructed with a monitoring system capable of detecting the entry of the liquid or vapor-phase of the hazardous substance stored in the primary containment into the secondary containment and capable of detecting water intrusion into the secondary containment.
Violation Notes: Returned to compliance on 11/02/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-06-2017
Citation: HSC 6.7 25290.1(d) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(d)
Violation Description: Failure of a UST system installed on or after July 1, 2004 to be designed and constructed with a monitoring system capable of detecting the entry of the liquid or vapor-phase of the hazardous substance stored in the primary containment into the secondary containment and capable of detecting water intrusion into the secondary containment.
Violation Notes: Returned to compliance on 09/13/2017.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-09-2015
Citation: HSC 6.7 25291 - California Health and Safety Code, Chapter 6.7, Section(s) 25291
Violation Description: Failure to maintain under-dispenser containment, sumps, and/or other secondary containment in good condition and/or free of debris/liquid.
Violation Notes: Returned to compliance on 08/08/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-07-2016
Citation: 23 CCR 16 2636(f)(2) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)(2)
Violation Description: Failure of the line leak detector (LLD) monitoring pressurized piping to meet one or more of the following requirements:Monitor at least hourly.Be capable of detecting a release of 3.0 gallons per hour at 10 p.s.i.g. Restrict or shut off the flow of product through the piping when a leak is detected.
Violation Notes: Returned to compliance on 09/13/2017.
Violation Division: Riverside County Department of Env Health
Violation Program: UST

EAGLE GLEN MOBIL (Continued) **S113142685**

Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 05-22-2015
Citation: HSC 6.95 25504(a) - California Health and Safety Code, Chapter 6.95, Section(s) 25504(a)
Violation Description: Failure to complete and/or submit hazardous material inventory forms for all reportable hazardous materials on site.
Violation Notes: Returned to compliance on 04/08/2016. Add 180 gallon waste oil tank.
Violation Division: Corona Fire Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 06-26-2014
Citation: HSC 6.7 25291 - California Health and Safety Code, Chapter 6.7, Section(s) 25291
Violation Description: Failure to maintain under-dispenser containment, sumps, and/or other secondary containment in good condition and/or free of debris/liquid.
Violation Notes: Returned to compliance on 07/10/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-09-2015
Citation: 23 CCR 16 2665 - California Code of Regulations, Title 23, Chapter 16, Section(s) 2665
Violation Description: Failure of the overfill prevention system to meet one of the following requirements: 1. Alert the transfer operator when the tank is 90 percent full by restricting the flow into the tank or triggering an audible and visual alarm; or 2. Restrict delivery of flow to the tank at least 30 minutes before the tank overfills, provided the restriction occurs when the tank is filled to no more than 95 percent of capacity; and activate an audible alarm at least five minutes before the tank overfills; or 3. Provide positive shut-off of flow to the tank when the tank is filled to no more than 95 percent of capacity; or 4. Provide positive shut-off of flow to the tank so that none of the fittings located on the top of the tank are exposed to product due to overfilling.
Violation Notes: Returned to compliance on 11/05/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 06-08-2018
Citation: Un-Specified
Violation Description: Business Plan Program - Operations/Maintenance - General Local Ordinance
Violation Notes: Spill kit is missing
Violation Division: Corona Fire Department
Violation Program: HMRRP

EAGLE GLEN MOBIL (Continued) **S113142685**

Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-09-2015
Citation: HSC 6.7 25284.2 - California Health and Safety Code, Chapter 6.7, Section(s) 25284.2
Violation Description: Failure to test the spill bucket annually.
Violation Notes: Returned to compliance on 09/13/2017.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-09-2015
Citation: HSC 6.7 25290.1(e) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(e)
Violation Description: Failure to maintain the interstitial space under constant vacuum, pressure, or hydrostatic such that a breach in the primary or secondary containment is detected before the liquid or vapor phase of the hazardous substance stored in the UST tank is released into the environment. (Product Tight)
Violation Notes: Returned to compliance on 11/05/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 05-22-2015
Citation: HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description: Business Plan Program - Operations/Maintenance - General
Violation Notes: Returned to compliance on 04/08/2016. Obtain spill kit to contain 180 gallons of product.
Violation Division: Corona Fire Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-09-2015
Citation: 23 CCR 16 2636(f) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)
Violation Description: Failure to continuously monitor the interstitial space of the tank, piping and/or sumps sump such that the leak detection activates an audible/visual alarm when a leak is detected.
Violation Notes: Returned to compliance on 08/08/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-05-2018
Citation: 23 CCR 16 2632(c)(2)(B), 2634(d)(1)(a), 2636(f)(1) - California Code

EAGLE GLEN MOBIL (Continued) **S113142685**

	of Regulations, Title 23, Chapter 16, Section(s) 2632(c)(2)(B), 2634(d)(1)(a), 2636(f)(1)
Violation Description:	Failure of the leak detection equipment to have an audible and visual alarm as required.
Violation Notes:	Returned to compliance on 07/10/2018.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-05-2018
Citation:	HSC 6.7 25290.1(e) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(e)
Violation Description:	Failure to maintain the interstitial space such that a breach in the primary or secondary containment is detected before the liquid or vapor phase of the hazardous substance stored in the UST tank is released into the environment, i.e., vapor, pressure, hydrostatic (VPH) monitoring.
Violation Notes:	Returned to compliance on 07/10/2018.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016
Citation:	23 CCR 16 2666(c) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2666(c)
Violation Description:	Failure of the line leak detector (LLD) monitoring single-walled pressurized piping to shut down the pump when a leak is detected or when the LLD fails or is disconnected.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016
Citation:	HSC 6.7 25290.1(c)(3), 25290.2(c)(3) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(c)(3), 25290.2(c)(3)
Violation Description:	Failure to keep water out of the secondary containment of UST systems installed on or after July 1, 2003 and before July 1, 2004, or on or after July 1, 2004.
Violation Notes:	Returned to compliance on 11/02/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016
Citation:	HSC 6.7 25292.1(a) - California Health and Safety Code, Chapter 6.7, Section(s) 25292.1(a)
Violation Description:	Failure to operate the UST system to prevent unauthorized releases including leaks, spills, and/or overfills.

EAGLE GLEN MOBIL (Continued) **S113142685**

Violation Notes:	Returned to compliance on 11/02/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	06-26-2014
Citation:	HSC 6.7 25290.1(e) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(e)
Violation Description:	Failure to maintain the interstitial space under constant vacuum, pressure, or hydrostatic such that a breach in the primary or secondary containment is detected before the liquid or vapor phase of the hazardous substance stored in the UST tank is released into the environment. (Product Tight)
Violation Notes:	Returned to compliance on 07/10/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	23 CCR 16 2636(f)(5) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)(5)
Violation Description:	Failure to maintain all product piping outside the dispenser to be fail-safe and shut down the pump when a leak is detected and the monitoring system shuts down the pump or flow restriction occurs when a leak is detected in the under dispenser containment.
Violation Notes:	Returned to compliance on 08/08/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-06-2017
Citation:	HSC 6.7 25281.5(b)(3) - California Health and Safety Code, Chapter 6.7, Section(s) 25281.5(b)(3)
Violation Description:	Failure to meet one or more exemption requirements for emergency generator tank system unburied fuel piping: Conduct daily visual inspections each time the tank is operated. Conduct daily visual inspections at least monthly. Maintain a log of inspection results for review by the CUPA.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016
Citation:	40 CFR 1 265.171 - U.S. Code of Federal Regulations, Title 40, Chapter 1, Section(s) 265.171
Violation Description:	Failure to accumulate hazardous waste in a container that is in good condition.
Violation Notes:	Returned to compliance on 09/13/2017.

EAGLE GLEN MOBIL (Continued) **S113142685**

Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-04-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-08-2018
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-06-2017
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-07-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-07-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 09-13-2013
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST

EAGLE GLEN MOBIL (Continued) **S113142685**

Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-26-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-05-2018
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-09-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 07-13-2018
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 11-03-2015
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 05-22-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Other/Unknown

EAGLE GLEN MOBIL (Continued) **S113142685**

Eval Date: 06-26-2014
Violations Found: Yes
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-30-2015
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Eagle Glen Mobil File Review/ Inspection
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 07-24-2013
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 09-30-2015
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 11-02-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Enforcement Action:
Site ID: 391913
Site Name: Eagle Glen Mobil
Site Address: 2261 EAGLE GLEN PKWY
Site City: CORONA
Site Zip: 92883
Enf Action Date: 05-22-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Corona Fire Department
Enf Action Program: HMRRP
Enf Action Source: CERS

EAGLE GLEN MOBIL (Continued) **S113142685**

Site ID: 391913
Site Name: Eagle Glen Mobil
Site Address: 2261 EAGLE GLEN PKWY
Site City: CORONA
Site Zip: 92883
Enf Action Date: 06-26-2014
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Riverside County Department of Env Health
Enf Action Program: UST
Enf Action Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Site Address: 2261 EAGLE GLEN PKWY
Site City: CORONA
Site Zip: 92883
Enf Action Date: 07-09-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Riverside County Department of Env Health
Enf Action Program: UST
Enf Action Source: CERS

Coordinates:
Site ID: 391913
Facility Name: Eagle Glen Mobil
Env Int Type Code: HMBP
Program ID: 10404193
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 33.821500
Longitude: -117.521740

Affiliation:
Affiliation Type Desc: Legal Owner
Entity Name: EMAD WASIF
Entity Title: Not reported
Affiliation Address: 2261 Eagle Glen Pkwy
Affiliation City: Corona
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 92883
Affiliation Phone: (951) 520-1990

Affiliation Type Desc: Environmental Contact
Entity Name: EMAD WASIF
Entity Title: Not reported
Affiliation Address: 2261 Eagle Glen Pkwy
Affiliation City: Corona
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92883
Affiliation Phone: Not reported

EAGLE GLEN MOBIL (Continued) **S113142685**

Affiliation Type Desc:	Identification Signer
Entity Name:	EMAD WASIF
Entity Title:	OWNER / OPERATOR
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Operator
Entity Name:	EMAD WASIF
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(951) 316-1096

Affiliation Type Desc:	Parent Corporation
Entity Name:	EAGLE GLEN MOBIL
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	2261 Eagle Glen Pkwy
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92883
Affiliation Phone:	Not reported

Affiliation Type Desc:	Property Owner
Entity Name:	EAGLE GLEN MOBIL
Entity Title:	Not reported
Affiliation Address:	2261 Eagle Glen Pkwy
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	United States

EAGLE GLEN MOBIL (Continued) **S113142685**

Affiliation Zip: 92883
Affiliation Phone: (951) 520-1990

Affiliation Type Desc: UST Permit Applicant
Entity Name: EMAD WASIF
Entity Title: OWNER / OPERATOR
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (951) 520-1990

Affiliation Type Desc: UST Property Owner Name
Entity Name: EAGLE GLEN MOBIL
Entity Title: Not reported
Affiliation Address: 2261 EAGLE GLEN PKWY
Affiliation City: CORONA
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 92883
Affiliation Phone: (951) 520-1990

Affiliation Type Desc: UST Tank Operator
Entity Name: EMAD WASIF
Entity Title: Not reported
Affiliation Address: 2261 EAGLE GLEN PKWY
Affiliation City: CORONA
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 92883
Affiliation Phone: (951) 520-1990

Affiliation Type Desc: Document Preparer
Entity Name: Dianne Fowler
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: UST Tank Owner
Entity Name: EAGLE GLEN MOBIL
Entity Title: Not reported
Affiliation Address: 2261 EAGLE GLEN PKWY
Affiliation City: CORONA
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 92883
Affiliation Phone: (951) 520-1990

HAZNET:
Site Name: EAGLE GLEN MOBIL
Year: 2017

EAGLE GLEN MOBIL (Continued) **S113142685**

GEPAID: CAL000307032
Contact: EMAD WASIF
Telephone: 9515201190
Mailing Name: Not reported
Mailing Address: 2261 EAGLE GLEN PKWY
Mailing City,St,Zip: CORONA, CA 928830785
Gen County: Riverside
TSD EPA ID: CAT080013352
TSD County: Los Angeles
Tons: 0.462
CA Waste Code: 135-Unspecified aqueous solution
Method: H039-Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Facility County: Riverside

Site Name: EAGLE GLEN MOBIL
Year: 2008
GEPAID: CAL000307032
Contact: EMAD A. WASIF
Telephone: 9515201190
Mailing Name: Not reported
Mailing Address: 2261 EAGLE GLEN PKWY
Mailing City,St,Zip: CORONA, CA 928830785
Gen County: Riverside
TSD EPA ID: CAT080013352
TSD County: Los Angeles
Tons: 0.02085
CA Waste Code: 223-Unspecified oil-containing waste
Method: H039-Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Facility County: Riverside

Site Name: EAGLE GLEN MOBIL
Year: 2007
GEPAID: CAL000307032
Contact: EMAD A. WASIF
Telephone: 9515201190
Mailing Name: Not reported
Mailing Address: 2261 EAGLE GLEN PKWY
Mailing City,St,Zip: CORONA, CA 928830785
Gen County: Riverside
TSD EPA ID: CAD008252405
TSD County: Los Angeles
Tons: 0.03
CA Waste Code: 352-Other organic solids
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Riverside

CERS TANKS:
Site ID: 391913
CERS ID: 10404193
Site Name: EAGLE GLEN MOBIL
CERS Description: Chemical Storage Facilities

Violations:
Site ID: 391913

EAGLE GLEN MOBIL (Continued) **S113142685**

Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016
Citation:	23 CCR 16 2631(g), 2632(c)(2)(A) & (B) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2631(g), 2632(c)(2)(A) & (B)
Violation Description:	Failure of the double-walled interstitial space of the tank to be continuously monitored with an audible and visual alarm.
Violation Notes:	Returned to compliance on 11/02/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	23 CCR 16 2638 - California Code of Regulations, Title 23, Chapter 16, Section(s) 2638
Violation Description:	Failure to test leak detection equipment as required every 12 months (VPH, sensor, LLD, ATG, etc.) and/or submit monitoring system certification to the CUPA within 30 days of completion of the test
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	23 CCR 16 2636(f)(1) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)(1)
Violation Description:	Failure of the double wall pressurized piping in the turbine sump to be continuously monitored with a system that activates an audible and visual alarm or restricts or stops flow at dispenser when a leak is detected.
Violation Notes:	Returned to compliance on 11/05/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-06-2017
Citation:	HSC 6.7 25290.2(d) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.2(d)
Violation Description:	Failure of a UST system installed on or after July 1, 2003 and before July 1, 2004 to be designed and constructed with a monitoring system capable of detecting the entry of the hazardous substance stored in the primary containment into the secondary containment and capable of detecting water intrusion into the secondary containment.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	05-22-2015

EAGLE GLEN MOBIL (Continued) **S113142685**

Citation:	HSC 6.95 25505(a)(4) - California Health and Safety Code, Chapter 6.95, Section(s) 25505(a)(4)
Violation Description:	Failure to provide initial and annual training to all employees in safety procedures in the event of a release or threatened release of a hazardous material or failure to document and maintain training records for a minimum of three years.
Violation Notes:	Returned to compliance on 04/08/2016. Provide annual employee training documents.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016
Citation:	HSC 6.7 25290.1(d) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(d)
Violation Description:	Failure of a UST system installed on or after July 1, 2004 to be designed and constructed with a monitoring system capable of detecting the entry of the liquid or vapor-phase of the hazardous substance stored in the primary containment into the secondary containment and capable of detecting water intrusion into the secondary containment.
Violation Notes:	Returned to compliance on 11/02/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-06-2017
Citation:	HSC 6.7 25290.1(d) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(d)
Violation Description:	Failure of a UST system installed on or after July 1, 2004 to be designed and constructed with a monitoring system capable of detecting the entry of the liquid or vapor-phase of the hazardous substance stored in the primary containment into the secondary containment and capable of detecting water intrusion into the secondary containment.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	HSC 6.7 25291 - California Health and Safety Code, Chapter 6.7, Section(s) 25291
Violation Description:	Failure to maintain under-dispenser containment, sumps, and/or other secondary containment in good condition and/or free of debris/liquid.
Violation Notes:	Returned to compliance on 08/08/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016

EAGLE GLEN MOBIL (Continued) **S113142685**

Citation:	23 CCR 16 2636(f)(2) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)(2)
Violation Description:	Failure of the line leak detector (LLD) monitoring pressurized piping to meet one or more of the following requirements:Monitor at least hourly.Be capable of detecting a release of 3.0 gallons per hour at 10 p.s.i.g. Restrict or shut off the flow of product through the piping when a leak is detected.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	05-22-2015
Citation:	HSC 6.95 25504(a) - California Health and Safety Code, Chapter 6.95, Section(s) 25504(a)
Violation Description:	Failure to complete and/or submit hazardous material inventory forms for all reportable hazardous materials on site.
Violation Notes:	Returned to compliance on 04/08/2016. Add 180 gallon waste oil tank.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	06-26-2014
Citation:	HSC 6.7 25291 - California Health and Safety Code, Chapter 6.7, Section(s) 25291
Violation Description:	Failure to maintain under-dispenser containment, sumps, and/or other secondary containment in good condition and/or free of debris/liquid.
Violation Notes:	Returned to compliance on 07/10/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	23 CCR 16 2665 - California Code of Regulations, Title 23, Chapter 16, Section(s) 2665
Violation Description:	Failure of the overfill prevention system to meet one of the following requirements: 1. Alert the transfer operator when the tank is 90 percent full by restricting the flow into the tank or triggering an audible and visual alarm; or 2. Restrict delivery of flow to the tank at least 30 minutes before the tank overfills, provided the restriction occurs when the tank is filled to no more than 95 percent of capacity; and activate an audible alarm at least five minutes before the tank overfills; or 3. Provide positive shut-off of flow to the tank when the tank is filled to no more than 95 percent of capacity; or 4. Provide positive shut-off of flow to the tank so that none of the fittings located on the top of the tank are exposed to product due to overfilling.
Violation Notes:	Returned to compliance on 11/05/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS

EAGLE GLEN MOBIL (Continued) **S113142685**

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 06-08-2018
Citation: Un-Specified
Violation Description: Business Plan Program - Operations/Maintenance - General Local Ordinance
Violation Notes: Spill kit is missing
Violation Division: Corona Fire Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-09-2015
Citation: HSC 6.7 25284.2 - California Health and Safety Code, Chapter 6.7, Section(s) 25284.2
Violation Description: Failure to test the spill bucket annually.
Violation Notes: Returned to compliance on 09/13/2017.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-09-2015
Citation: HSC 6.7 25290.1(e) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(e)
Violation Description: Failure to maintain the interstitial space under constant vacuum, pressure, or hydrostatic such that a breach in the primary or secondary containment is detected before the liquid or vapor phase of the hazardous substance stored in the UST tank is released into the environment. (Product Tight)
Violation Notes: Returned to compliance on 11/05/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 05-22-2015
Citation: HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description: Business Plan Program - Operations/Maintenance - General
Violation Notes: Returned to compliance on 04/08/2016. Obtain spill kit to contain 180 gallons of product.
Violation Division: Corona Fire Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-09-2015
Citation: 23 CCR 16 2636(f) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)
Violation Description: Failure to continuously monitor the interstitial space of the tank, piping and/or sumps sump such that the leak detection activates an audible/visual alarm when a leak is detected.

EAGLE GLEN MOBIL (Continued) **S113142685**

Violation Notes: Returned to compliance on 08/08/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-05-2018
Citation: 23 CCR 16 2632(c)(2)(B), 2634(d)(1)(a), 2636(f)(1) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2632(c)(2)(B), 2634(d)(1)(a), 2636(f)(1)
Violation Description: Failure of the leak detection equipment to have an audible and visual alarm as required.
Violation Notes: Returned to compliance on 07/10/2018.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-05-2018
Citation: HSC 6.7 25290.1(e) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(e)
Violation Description: Failure to maintain the interstitial space such that a breach in the primary or secondary containment is detected before the liquid or vapor phase of the hazardous substance stored in the UST tank is released into the environment, i.e., vapor, pressure, hydrostatic (VPH) monitoring.
Violation Notes: Returned to compliance on 07/10/2018.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-07-2016
Citation: 23 CCR 16 2666(c) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2666(c)
Violation Description: Failure of the line leak detector (LLD) monitoring single-walled pressurized piping to shut down the pump when a leak is detected or when the LLD fails or is disconnected.
Violation Notes: Returned to compliance on 09/13/2017.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-07-2016
Citation: HSC 6.7 25290.1(c)(3), 25290.2(c)(3) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(c)(3), 25290.2(c)(3)
Violation Description: Failure to keep water out of the secondary containment of UST systems installed on or after July 1, 2003 and before July 1, 2004, or on or after July 1, 2004.
Violation Notes: Returned to compliance on 11/02/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: UST

EAGLE GLEN MOBIL (Continued) **S113142685**

Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-07-2016
Citation: HSC 6.7 25292.1(a) - California Health and Safety Code, Chapter 6.7, Section(s) 25292.1(a)
Violation Description: Failure to operate the UST system to prevent unauthorized releases including leaks, spills, and/or overfills.
Violation Notes: Returned to compliance on 11/02/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 06-26-2014
Citation: HSC 6.7 25290.1(e) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(e)
Violation Description: Failure to maintain the interstitial space under constant vacuum, pressure, or hydrostatic such that a breach in the primary or secondary containment is detected before the liquid or vapor phase of the hazardous substance stored in the UST tank is released into the environment. (Product Tight)
Violation Notes: Returned to compliance on 07/10/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-09-2015
Citation: 23 CCR 16 2636(f)(5) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)(5)
Violation Description: Failure to maintain all product piping outside the dispenser to be fail-safe and shut down the pump when a leak is detected and the monitoring system shuts down the pump or flow restriction occurs when a leak is detected in the under dispenser containment.
Violation Notes: Returned to compliance on 08/08/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-06-2017
Citation: HSC 6.7 25281.5(b)(3) - California Health and Safety Code, Chapter 6.7, Section(s) 25281.5(b)(3)
Violation Description: Failure to meet one or more exemption requirements for emergency generator tank system unburied fuel piping: Conduct daily visual inspections each time the tank is operated. Conduct daily visual inspections at least monthly. Maintain a log of inspection results for review by the CUPA.
Violation Notes: Returned to compliance on 09/13/2017.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

EAGLE GLEN MOBIL (Continued) **S113142685**

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-07-2016
Citation: 40 CFR 1 265.171 - U.S. Code of Federal Regulations, Title 40, Chapter 1, Section(s) 265.171
Violation Description: Failure to accumulate hazardous waste in a container that is in good condition.
Violation Notes: Returned to compliance on 09/13/2017.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-04-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-08-2018
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-06-2017
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-07-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-07-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

EAGLE GLEN MOBIL (Continued) **S113142685**

Eval General Type: Other/Unknown
Eval Date: 09-13-2013
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-26-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-05-2018
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-09-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 07-13-2018
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 11-03-2015
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 05-22-2015
Violations Found: Yes

EAGLE GLEN MOBIL (Continued) **S113142685**

Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 06-26-2014
Violations Found: Yes
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-30-2015
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Eagle Glen Mobil File Review/ Inspection
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 07-24-2013
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 09-30-2015
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 11-02-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Enforcement Action:
Site ID: 391913
Site Name: Eagle Glen Mobil
Site Address: 2261 EAGLE GLEN PKWY
Site City: CORONA
Site Zip: 92883

EAGLE GLEN MOBIL (Continued) **S113142685**

Enf Action Date: 05-22-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Corona Fire Department
Enf Action Program: HMRRP
Enf Action Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Site Address: 2261 EAGLE GLEN PKWY
Site City: CORONA
Site Zip: 92883
Enf Action Date: 06-26-2014
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Riverside County Department of Env Health
Enf Action Program: UST
Enf Action Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Site Address: 2261 EAGLE GLEN PKWY
Site City: CORONA
Site Zip: 92883
Enf Action Date: 07-09-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Riverside County Department of Env Health
Enf Action Program: UST
Enf Action Source: CERS

Coordinates:
Site ID: 391913
Facility Name: Eagle Glen Mobil
Env Int Type Code: HMBP
Program ID: 10404193
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 33.821500
Longitude: -117.521740

Affiliation:
Affiliation Type Desc: Legal Owner
Entity Name: EMAD WASIF
Entity Title: Not reported
Affiliation Address: 2261 Eagle Glen Pkwy
Affiliation City: Corona
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 92883
Affiliation Phone: (951) 520-1990

Affiliation Type Desc: Environmental Contact

EAGLE GLEN MOBIL (Continued) **S113142685**

Entity Name:	EMAD WASIF
Entity Title:	Not reported
Affiliation Address:	2261 Eagle Glen Pkwy
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92883
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	EMAD WASIF
Entity Title:	OWNER / OPERATOR
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Operator
Entity Name:	EMAD WASIF
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(951) 316-1096
Affiliation Type Desc:	Parent Corporation
Entity Name:	EAGLE GLEN MOBIL
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	2261 Eagle Glen Pkwy
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92883

EAGLE GLEN MOBIL (Continued) **S113142685**

Affiliation Phone:	Not reported
Affiliation Type Desc:	Property Owner
Entity Name:	EAGLE GLEN MOBIL
Entity Title:	Not reported
Affiliation Address:	2261 Eagle Glen Pkwy
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92883
Affiliation Phone:	(951) 520-1990
Affiliation Type Desc:	UST Permit Applicant
Entity Name:	EMAD WASIF
Entity Title:	OWNER / OPERATOR
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(951) 520-1990
Affiliation Type Desc:	UST Property Owner Name
Entity Name:	EAGLE GLEN MOBIL
Entity Title:	Not reported
Affiliation Address:	2261 EAGLE GLEN PKWY
Affiliation City:	CORONA
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92883
Affiliation Phone:	(951) 520-1990
Affiliation Type Desc:	UST Tank Operator
Entity Name:	EMAD WASIF
Entity Title:	Not reported
Affiliation Address:	2261 EAGLE GLEN PKWY
Affiliation City:	CORONA
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92883
Affiliation Phone:	(951) 520-1990
Affiliation Type Desc:	Document Preparer
Entity Name:	Dianne Fowler
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	UST Tank Owner
Entity Name:	EAGLE GLEN MOBIL
Entity Title:	Not reported
Affiliation Address:	2261 EAGLE GLEN PKWY
Affiliation City:	CORONA

EAGLE GLEN MOBIL (Continued) **S113142685**

Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 92883
Affiliation Phone: (951) 520-1990

A3 **EAGLE GLEN MOBIL** **UST** **U004053273**
North **2261 EAGLE GLEN PKWY** **N/A**
< 1/8 **CORONA, CA 92883**
0.069 mi.
366 ft. **Site 3 of 3 in cluster A**

Relative: **Lower**

Actual: **914 ft.**

UST:
Facility ID: FA0024172
Permitting Agency: Riverside County Department of Environmental Health
Latitude: 33.8215
Longitude: -117.52174

RIVERSIDE CO. UST:
Region: RIVERSIDE
Total Tanks: 3

B4 **STATER BROS MARKETS 170** **CERS HAZ WASTE** **S113466825**
NNW **2243 EAGLE GLEN PKWY** **HAZNET** **N/A**
1/8-1/4 **CORONA, CA 92883** **CERS**
0.145 mi.
764 ft. **Site 1 of 5 in cluster B**

Relative: **Higher**

Actual: **967 ft.**

CERS HAZ WASTE:
Site ID: 71282
CERS ID: 10553110
CERS Description: Hazardous Waste Generator

Violations:
Site ID: 71282
Site Name: Stater Bros Markets 170
Violation Date: 09-23-2016
Citation: 22 CCR 12 66262.40(a) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.40(a)
Violation Description: Failure to keep a copy of each properly signed manifest for at least three years from the date the waste was accepted by the initial transporter. The manifest signed at the time the waste was accepted for transport shall be kept until receiving a signed copy from the designated facility which received the waste.
Violation Notes: Returned to compliance on 11/10/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Site ID: 71282
Site Name: Stater Bros Markets 170
Violation Date: 09-23-2016
Citation: 22 CCR 12 66262.34(d) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(d)
Violation Description: Failure to send hazardous waste offsite for treatment, storage, or disposal within 180 days (or 270 days if waste is transported over 200

STATER BROS MARKETS 170 (Continued) **S113466825**

	miles) for a generator who generates less than 1000 kilogram per month if all of the following conditions are met: (1) The quantity of hazardous waste accumulated onsite never exceeds 6,000 kilograms. (2) The generator complies with the requirements of 40 Code of Federal Regulations section 262.34(d), (e) and (f). (3) The generator does not hold acutely hazardous waste or extremely hazardous waste in an amount greater than one kilogram for more than 90 days.
Violation Notes:	Returned to compliance on 11/10/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS
Site ID:	71282
Site Name:	Stater Bros Markets 170
Violation Date:	10-13-2016
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Operations/Maintenance - General
Violation Notes:	Returned to compliance on 11/10/2016. 104B - Post emergency numbers (found in CERS Emergency Response Plan) in conspicuous location. Make sure the font size is large.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	71282
Site Name:	Stater Bros Markets 170
Violation Date:	10-13-2016
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Administration/Documentation - General
Violation Notes:	Returned to compliance on 11/10/2016. 104A ? Post NFPA placards, see attached page 2 of 2
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	71282
Site Name:	Stater Bros Markets 170
Violation Date:	10-13-2016
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Operations/Maintenance - General
Violation Notes:	Returned to compliance on 11/10/2016. 104D - Obtain Safety Data Sheet and make it available to employees.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	71282
Site Name:	Stater Bros Markets 170
Violation Date:	09-23-2016
Citation:	22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description:	Failure to properly label hazardous waste accumulation containers and portable tanks with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical

STATER BROS MARKETS 170 (Continued) **S113466825**

	characteristics of the Hazardous Waste, and starting accumulation date.
Violation Notes:	Returned to compliance on 11/10/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS
Site ID:	71282
Site Name:	Stater Bros Markets 170
Violation Date:	10-13-2016
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Operations/Maintenance - General
Violation Notes:	Returned to compliance on 11/10/2016. 104C -Replace "Compressed Gas Storage" sign at gas storage room.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	71282
Site Name:	Stater Bros Markets 170
Violation Date:	10-13-2016
Citation:	HSC 6.95 25505(a)(4) - California Health and Safety Code, Chapter 6.95, Section(s) 25505(a)(4)
Violation Description:	Failure to provide initial and annual training to all employees in safety procedures in the event of a release or threatened release of a hazardous material or failure to document and maintain training records for a minimum of three years.
Violation Notes:	Returned to compliance on 11/10/2016. Provide training (Hazmat) for employees within 15 days and document it, send signed sheets(s) to: ab@ggcorp.net
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	09-23-2016
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Riverside County Department of Env Health
Eval Program:	HW
Eval Source:	CERS
Eval General Type:	Other/Unknown
Eval Date:	11-10-2016
Violations Found:	No
Eval Type:	Other, not routine, done by local agency
Eval Notes:	Not reported
Eval Division:	Corona Fire Department
Eval Program:	HMRRP
Eval Source:	CERS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	10-13-2016
Violations Found:	Yes

STATER BROS MARKETS 170 (Continued) **S113466825**

Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Coordinates:
Site ID: 71282
Facility Name: Stater Bros Markets 170
Env Int Type Code: HWG
Program ID: 10553110
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 33.822620
Longitude: -117.523120

Affiliation:
Affiliation Type Desc: Operator
Entity Name: Stater Bros. Markets 170
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (909) 733-5000

Affiliation Type Desc: Parent Corporation
Entity Name: Stater Bros. Markets
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Document Preparer
Entity Name: Steven Toscano
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: 2243 Eagle Glen Parkway
Affiliation City: Corona
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92408
Affiliation Phone: Not reported

STATER BROS MARKETS 170 (Continued) **S113466825**

Affiliation Type Desc:	Legal Owner
Entity Name:	Stater Bros. Markets
Entity Title:	Not reported
Affiliation Address:	P.O. Box 150
Affiliation City:	San Bernardino
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92408
Affiliation Phone:	(909) 733-5000

Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055

Affiliation Type Desc:	Environmental Contact
Entity Name:	Steven Toscano
Entity Title:	Not reported
Affiliation Address:	P.O. Box 150
Affiliation City:	San Bernardino
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92408
Affiliation Phone:	Not reported

Affiliation Type Desc:	Identification Signer
Entity Name:	Steven Toscano
Entity Title:	Supervisor of Support Services
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Property Owner
Entity Name:	Stater Bros.Markets
Entity Title:	Not reported
Affiliation Address:	P.O. Box 150
Affiliation City:	San Bernardino
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92408
Affiliation Phone:	(909) 733-5000

HAZNET:

Site Name:	STATER BROS MARKETS # 170
Year:	2017
GEPAID:	CAL000334464
Contact:	CHERYL SKALICKY
Telephone:	9097335288

STATER BROS MARKETS 170 (Continued) **S113466825**

Mailing Name: Not reported
Mailing Address: PO BOX 150
Mailing City,St,Zip: SAN BERNARDINO, CA 924020000
Gen County: Riverside
TSD EPA ID: CAD044429835
TSD County: Los Angeles
Tons: 0.0025
CA Waste Code: 311-Pharmaceutical waste
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Riverside

Site Name: STATER BROS MARKETS # 170
Year: 2015
GEPAID: CAL000334464
Contact: CHERYL SKALICKY
Telephone: 9097335288
Mailing Name: Not reported
Mailing Address: PO BOX 150
Mailing City,St,Zip: SAN BERNARDINO, CA 924020000
Gen County: Riverside
TSD EPA ID: CAD028409019
TSD County: Los Angeles
Tons: 0.005
CA Waste Code: 311-Pharmaceutical waste
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Riverside

Site Name: STATER BROS MARKETS # 170
Year: 2015
GEPAID: CAL000334464
Contact: CHERYL SKALICKY
Telephone: 9097335288
Mailing Name: Not reported
Mailing Address: PO BOX 150
Mailing City,St,Zip: SAN BERNARDINO, CA 924020000
Gen County: Riverside
TSD EPA ID: AZR000515924
TSD County: 99
Tons: 0.0125
CA Waste Code: 352-Other organic solids
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Riverside

Site Name: STATER BROS MARKETS # 170
Year: 2014
GEPAID: CAL000334464
Contact: CHERYL SKALICKY
Telephone: 9097335288
Mailing Name: Not reported
Mailing Address: PO BOX 150
Mailing City,St,Zip: SAN BERNARDINO, CA 924020000
Gen County: Riverside
TSD EPA ID: CAD028409019
TSD County: Los Angeles

STATER BROS MARKETS 170 (Continued) **S113466825**

Tons: 0.005
CA Waste Code: 311-Pharmaceutical waste
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Riverside

Site Name: STATER BROS MARKETS # 170
Year: 2013
GEPAID: CAL000334464
Contact: CHERYL SKALICKY
Telephone: 9097335288
Mailing Name: Not reported
Mailing Address: PO BOX 150
Mailing City,St,Zip: SAN BERNARDINO, CA 924020000
Gen County: Riverside
TSD EPA ID: CAD028409019
TSD County: Los Angeles
Tons: 0.005
CA Waste Code: 311-Pharmaceutical waste
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Riverside

Click this hyperlink while viewing on your computer to access
2 additional CA_HAZNET: record(s) in the EDR Site Report.

CERS TANKS:
Site ID: 71282
CERS ID: 10553110
Site Name: STATER BROS MARKETS 170
CERS Description: Chemical Storage Facilities

Violations:
Site ID: 71282
Site Name: Stater Bros Markets 170
Violation Date: 09-23-2016
Citation: 22 CCR 12 66262.40(a) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.40(a)
Violation Description: Failure to keep a copy of each properly signed manifest for at least three years from the date the waste was accepted by the initial transporter. The manifest signed at the time the waste was accepted for transport shall be kept until receiving a signed copy from the designated facility which received the waste.
Violation Notes: Returned to compliance on 11/10/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Site ID: 71282
Site Name: Stater Bros Markets 170
Violation Date: 09-23-2016
Citation: 22 CCR 12 66262.34(d) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(d)
Violation Description: Failure to send hazardous waste offsite for treatment, storage, or disposal within 180 days (or 270 days if waste is transported over 200 miles) for a generator who generates less than 1000 kilogram per month if all of the following conditions are met: (1) The quantity of

STATER BROS MARKETS 170 (Continued) **S113466825**

hazardous waste accumulated onsite never exceeds 6,000 kilograms. (2) The generator complies with the requirements of 40 Code of Federal Regulations section 262.34(d), (e) and (f). (3) The generator does not hold acutely hazardous waste or extremely hazardous waste in an amount greater than one kilogram for more than 90 days.

Violation Notes: Returned to compliance on 11/10/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Site ID: 71282
Site Name: Stater Bros Markets 170
Violation Date: 10-13-2016
Citation: HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description: Business Plan Program - Operations/Maintenance - General
Violation Notes: Returned to compliance on 11/10/2016. 104B - Post emergency numbers (found in CERS Emergency Response Plan) in conspicuous location. Make sure the font size is large.
Violation Division: Corona Fire Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 71282
Site Name: Stater Bros Markets 170
Violation Date: 10-13-2016
Citation: HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description: Business Plan Program - Administration/Documentation - General
Violation Notes: Returned to compliance on 11/10/2016. 104A ? Post NFPA placards, see attached page 2 of 2
Violation Division: Corona Fire Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 71282
Site Name: Stater Bros Markets 170
Violation Date: 10-13-2016
Citation: HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description: Business Plan Program - Operations/Maintenance - General
Violation Notes: Returned to compliance on 11/10/2016. 104D - Obtain Safety Data Sheet and make it available to employees.
Violation Division: Corona Fire Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 71282
Site Name: Stater Bros Markets 170
Violation Date: 09-23-2016
Citation: 22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description: Failure to properly label hazardous waste accumulation containers and portable tanks with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.

STATER BROS MARKETS 170 (Continued) **S113466825**

Violation Notes: Returned to compliance on 11/10/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Site ID: 71282
Site Name: Stater Bros Markets 170
Violation Date: 10-13-2016
Citation: HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description: Business Plan Program - Operations/Maintenance - General
Violation Notes: Returned to compliance on 11/10/2016. 104C -Replace "Compressed Gas Storage" sign at gas storage room.
Violation Division: Corona Fire Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 71282
Site Name: Stater Bros Markets 170
Violation Date: 10-13-2016
Citation: HSC 6.95 25505(a)(4) - California Health and Safety Code, Chapter 6.95, Section(s) 25505(a)(4)
Violation Description: Failure to provide initial and annual training to all employees in safety procedures in the event of a release or threatened release of a hazardous material or failure to document and maintain training records for a minimum of three years.
Violation Notes: Returned to compliance on 11/10/2016. Provide training (Hazmat) for employees within 15 days and document it, send signed sheets(s) to: ab@ggcorp.net
Violation Division: Corona Fire Department
Violation Program: HMRRP
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 09-23-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 11-10-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 10-13-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported

STATER BROS MARKETS 170 (Continued) **S113466825**

Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Coordinates:
Site ID: 71282
Facility Name: Stater Bros Markets 170
Env Int Type Code: HWG
Program ID: 10553110
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 33.822620
Longitude: -117.523120

Affiliation:
Affiliation Type Desc: Operator
Entity Name: Stater Bros. Markets 170
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (909) 733-5000

Affiliation Type Desc: Parent Corporation
Entity Name: Stater Bros. Markets
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Document Preparer
Entity Name: Steven Toscano
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: 2243 Eagle Glen Parkway
Affiliation City: Corona
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92408
Affiliation Phone: Not reported

Affiliation Type Desc: Legal Owner

STATER BROS MARKETS 170 (Continued) **S113466825**

Entity Name:	Stater Bros. Markets
Entity Title:	Not reported
Affiliation Address:	P.O. Box 150
Affiliation City:	San Bernardino
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92408
Affiliation Phone:	(909) 733-5000
Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055
Affiliation Type Desc:	Environmental Contact
Entity Name:	Steven Toscano
Entity Title:	Not reported
Affiliation Address:	P.O. Box 150
Affiliation City:	San Bernardino
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92408
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Steven Toscano
Entity Title:	Supervisor of Support Services
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Property Owner
Entity Name:	Stater Bros.Markets
Entity Title:	Not reported
Affiliation Address:	P.O. Box 150
Affiliation City:	San Bernardino
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92408
Affiliation Phone:	(909) 733-5000

B5
NNW
1/8-1/4
0.145 mi.
764 ft.

STATER BROS MARKETS #170
2243 EAGLE GLEN PKWY
CORONA, CA 92883

Site 2 of 5 in cluster B

RCRA-LQG **1016954490**
CAL000334464

Relative:
Higher

Actual:
967 ft.

RCRA-LQG:

Date form received by agency:	03/01/2014
Facility name:	STATER BROS MARKETS #170
Facility address:	2243 EAGLE GLEN PKWY CORONA, CA 92883
EPA ID:	CAL000334464
Mailing address:	PO BOX 150 SAN BERNARDINO, CA 92402
Contact:	CHERYL L SKALICKY
Contact address:	PO BOX 150 SAN BERNARDINO, CA 92402
Contact country:	Not reported
Contact telephone:	909-733-5288
Contact email:	CHERYL.SKALICKY@STATERBROS.COM
EPA Region:	09
Classification:	Large Quantity Generator
Description:	Handler: generates 1,000 kg or more of hazardous waste during any calendar month; or generates more than 1 kg of acutely hazardous waste during any calendar month; or generates more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month; or generates 1 kg or less of acutely hazardous waste during any calendar month, and accumulates more than 1 kg of acutely hazardous waste at any time; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates more than 100 kg of that material at any time

Owner/Operator Summary:

Owner/operator name:	STATER BROS. MARKETS
Owner/operator address:	Not reported Not reported
Owner/operator country:	Not reported
Owner/operator telephone:	Not reported
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	06/04/2003
Owner/Op end date:	Not reported

Owner/operator name:	STATER BROS MARKETS
Owner/operator address:	S TIPPECANOE AVE SAN BERNARDINO, CA 92408
Owner/operator country:	Not reported
Owner/operator telephone:	909-733-5000
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner

STATER BROS MARKETS #170 (Continued) **1016954490**

Owner/Op start date: 06/04/2003
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

Violation Status: No violations found

B6 **EAGLE GLEN DENTAL GROUP** **EDR Hist Cleaner** **1018826911**
NNW **3811 BEDFORD CANYON RD** **N/A**
1/8-1/4 **CORONA, CA 92883**
0.167 mi.
883 ft. **Site 3 of 5 in cluster B**

Relative: EDR Hist Cleaner
Higher

Actual:
965 ft.

Year:	Name:	Type:
2006	EAGLE GLEN DENTAL GROUP	Laundry And Drycleaner Agents
2007	EAGLE GLEN DENTAL GROUP	Laundry And Drycleaner Agents
2008	EAGLE GLEN DENTAL GROUP	Laundry And Drycleaner Agents
2009	EAGLE GLEN DENTAL GROUP	Laundry And Drycleaner Agents
2010	EAGLE GLEN DENTAL GROUP	Laundry And Drycleaner Agents
2011	EAGLE GLEN DENTAL GROUP	Laundry And Drycleaner Agents
2012	EAGLE GLEN DENTAL GROUP	Laundry And Drycleaner Agents
2013	EAGLE GLEN DENTAL GROUP	Laundry And Drycleaner Agents
2014	EAGLE GLEN DENTAL GROUP	Laundry And Drycleaner Agents

B7 **CORKY'S KITCHEN AND BAKERY** **DRYCLEANERS** **S121695531**
NNW **3811 BEDFORD CANYON RD STE 108** **CERS** **N/A**
1/8-1/4 **CORONA, CA 92883**
0.167 mi.
883 ft. **Site 4 of 5 in cluster B**

Relative: DRYCLEAN SOUTH COAST:
Higher
Facility ID: 141781
Actual: Application Number: 433831
965 ft. Permit Number: F70640
Status: A

CORKY'S KITCHEN AND BAKERY (Continued) **S121695531**

Representative Name:	KWANG HWAN LEE
Representative Telephone:	951 7366089
Permit Status:	EXPIRED
BCAT Number:	000233
BCAT Description:	DRY CLEANING EQUIP PETROLEUM SOLVENT
CCAT Number:	Not reported
CCAT Description:	Not reported
UTM East:	0
UTM North:	0

CERS TANKS:

Site ID:	108087
CERS ID:	10592263
Site Name:	CORKY'S KITCHEN AND BAKERY
CERS Description:	Chemical Storage Facilities

Violations:

Site ID:	108087
Site Name:	Corky's Kitchen and Bakery
Violation Date:	09-05-2017
Citation:	Un-Specified
Violation Description:	Business Plan Program - Operations/Maintenance - General Local Ordinance
Violation Notes:	Returned to compliance on 10/13/2017. 104A- NFPA sticker needed on bulk tank, add 'SA' to white section of placard. (on tank and back door)
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS

Site ID:	108087
Site Name:	Corky's Kitchen and Bakery
Violation Date:	09-05-2017
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to complete and electronically submit a site map with all required content.
Violation Notes:	Returned to compliance on 10/25/2017. Label bulk CO2 tank on site map
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS

Site ID:	108087
Site Name:	Corky's Kitchen and Bakery
Violation Date:	09-05-2017
Citation:	HSC 6.95 25505(a)(4) - California Health and Safety Code, Chapter 6.95, Section(s) 25505(a)(4)
Violation Description:	Failure to provide initial and annual training to all employees in safety procedures in the event of a release or threatened release of a hazardous material or failure to document and maintain training records for a minimum of three years.
Violation Notes:	Returned to compliance on 10/15/2017. Complete hazmat training for all employees, keep sign-in sheet on site. Retain records for 3 years.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS

CORKY'S KITCHEN AND BAKERY (Continued) **S121695531**

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	09-05-2017
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Corona Fire Department
Eval Program:	HMRRP
Eval Source:	CERS

Eval General Type:	Other/Unknown
Eval Date:	10-13-2017
Violations Found:	No
Eval Type:	Other, not routine, done by local agency
Eval Notes:	Not reported
Eval Division:	Corona Fire Department
Eval Program:	HMRRP
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	09-24-2014
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	initial inspection, required to disclose update #327
Eval Division:	Corona Fire Department
Eval Program:	HMRRP
Eval Source:	CERS

Enforcement Action:

Site ID:	108087
Site Name:	Corky's Kitchen and Bakery
Site Address:	3811 BEDFORD CANYON RD STE 108
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	03-29-2017
Enf Action Type:	Notice of Violation (Unified Program)
Enf Action Description:	Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:	NOV issued via email; Failure to update HMBP.
Enf Action Division:	Corona Fire Department
Enf Action Program:	UNSPEC
Enf Action Source:	CERS

Affiliation:

Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055

Affiliation Type Desc:	Environmental Contact
Entity Name:	Michael Towles
Entity Title:	Not reported

CORKY'S KITCHEN AND BAKERY (Continued) **S121695531**

Affiliation Address:	8656 Utica Ave Ste #150
Affiliation City:	Rancho Cucamonga
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	91730
Affiliation Phone:	Not reported
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	8656 Utica Ave Ste #150
Affiliation City:	Rancho Cucamonga
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	91730
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Michael Towles
Entity Title:	President
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Operator
Entity Name:	Overeasy, Inc.
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(909) 941-6868
Affiliation Type Desc:	Parent Corporation
Entity Name:	Corky's Kitchen and Bakery
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Document Preparer
Entity Name:	Kim Parker
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

CORKY'S KITCHEN AND BAKERY (Continued) **S121695531**

Affiliation Type Desc:	Legal Owner
Entity Name:	Michael Towles
Entity Title:	Not reported
Affiliation Address:	8656 Utica Ave Ste #150
Affiliation City:	Rancho Cucamonga
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	91730
Affiliation Phone:	(909) 941-6868

B8 **EAGLE DRY CLEANERS** **DRYCLEANERS** **S106858441**
NNW **3811 BEDFORD CANYON** **N/A**
1/8-1/4 **CORONA, CA 92883**
0.167 mi.
883 ft. **Site 5 of 5 in cluster B**

Relative: **Higher**
Actual: **965 ft.**

DRYCLEANERS:

EPA Id:	CAL000289787
NAICS Code:	81232
NAICS Description:	Drycleaning and Laundry Services (except Coin-Operated)
SIC Code:	7211
SIC Description:	Power Laundries, Family and Commercial
Create Date:	12/27/2004
Facility Active:	Yes
Inactive Date:	Not reported
Facility Addr2:	Not reported
Owner Name:	EAGLE GLEN CLEANERS
Owner Address:	1158 MERLIN LANE
Owner Address 2:	Not reported
Owner Telephone:	9097329926
Contact Name:	JEESEON LEE
Contact Address:	1158 MERLIN LANE
Contact Address 2:	Not reported
Contact Telephone:	9097329926
Mailing Name:	Not reported
Mailing Address 1:	3811 BEDFORD CANYON RD
Mailing Address 2:	STE107
Mailing City:	CORONA
Mailing State:	CA
Mailing Zip:	92883
Owner Fax:	9514963941
Region Code:	4

---

9 **PACIFIC CLAY PRODUCTS INC** **ENVIROSTOR** **S104549216**
NE **20325 TEMESCAL CANYON ROAD** **CPS-SLIC** **N/A**
1/2-1 **CORONA, CA 91719** **CHMIRS**
0.649 mi. **CERS**
3428 ft.

Relative: **Lower**
Actual: **810 ft.**

ENVIROSTOR:

Facility ID:	33320001
Status:	Refer: Other Agency
Status Date:	04/22/1988
Site Code:	Not reported
Site Type:	Historical

PACIFIC CLAY PRODUCTS INC (Continued) **S104549216**

Site Type Detailed:	* Historical
Acres:	Not reported
NPL:	NO
Regulatory Agencies:	NONE SPECIFIED
Lead Agency:	NONE SPECIFIED
Program Manager:	Not reported
Supervisor:	* Mmonroy
Division Branch:	Cleanup Cypress
Assembly:	67
Senate:	28
Special Program:	* CERC2
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Not reported
Latitude:	33.79611
Longitude:	-117.5005
APN:	NONE SPECIFIED
Past Use:	NONE SPECIFIED
Potential COC:	* HOUSEHOLD WASTES * DETERGENT & SOAP * WASTE OIL & MIXED OIL
Confirmed COC:	NONE SPECIFIED
Potential Description:	NONE SPECIFIED
Alias Name:	GLADDING MCBEAN COMPANY
Alias Type:	Alternate Name
Alias Name:	33320001
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	* Discovery
Completed Date:	03/09/1983
Comments:	FACILITY IDENTIFIED ID FROM RWQCB FILE SEARCH DISCHARGE WASTES TO EVAPORATION POND

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Screening
Completed Date:	10/25/1994
Comments:	Database verification project confirms NFA for DTSC.

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Assessment Report
Completed Date:	04/22/1988
Comments:	PRELIM ASSESS DONE NO FURTHER ACTION FOR STATE OR EPA

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Screening
Completed Date:	03/24/1987
Comments:	SITE SCREENING DONE PA RECOM BASED ON LACK OF INFO ON TYPE OF OPERATION AND WASTES PRESENT

Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported

PACIFIC CLAY PRODUCTS INC (Continued) **S104549216**

Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

CPS-SLIC:
Site Name: MURDOCK DEVELOPMENT PROPERTY
Region: STATE
Facility Status: **Completed - Case Closed**
Status Date: 08/02/2005
Global Id: SL208433898
Lead Agency: SANTA ANA RWQCB (REGION 8)
Lead Agency Case Number: Not reported
Latitude: 33.8719664484546
Longitude: -117.570827465603
Case Type: Cleanup Program Site
Case Worker: Not reported
Local Agency: Not reported
RB Case Number: SL208433898
File Location: Not reported
Potential Media Affected: Other Groundwater (uses other than drinking water), Soil
Potential Contaminants of Concern: Not reported
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Site Name: GATEWAY BUSINESS PARK
Region: STATE
Facility Status: **Completed - Case Closed**
Status Date: 08/28/2015
Global Id: T10000000196
Lead Agency: SANTA ANA RWQCB (REGION 8)
Lead Agency Case Number: Not reported
Latitude: 33.826096
Longitude: -117.511588
Case Type: Cleanup Program Site
Case Worker: Not reported
Local Agency: Not reported
RB Case Number: Not reported
File Location: Regional Board
Potential Media Affected: Not reported
Potential Contaminants of Concern: Not reported
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

SLIC REG 8:
Type: Soil and Groundwater
Facility Status: Closed
Staff: MGC
Substance: TPH,SOLVENT
Lead Agency: Regional Board
Location Code: Not reported
Thomas Bros Code: Not reported

PACIFIC CLAY PRODUCTS INC (Continued) **S104549216**

CHMIRS:

OES Incident Number:	9-5299
OES notification:	12/15/1999
OES Date:	Not reported
OES Time:	Not reported
Date Completed:	**Not reported**
Property Use:	Not reported
Agency Id Number:	Not reported
Agency Incident Number:	Not reported
Time Notified:	Not reported
Time Completed:	Not reported
Surrounding Area:	Not reported
Estimated Temperature:	Not reported
Property Management:	Not reported
More Than Two Substances Involved?:	Not reported
Resp Agncy Personel # Of Decontaminated:	Not reported
Responding Agency Personel # Of Injuries:	Not reported
Responding Agency Personel # Of Fatalities:	Not reported
Others Number Of Decontaminated:	Not reported
Others Number Of Injuries:	Not reported
Others Number Of Fatalities:	Not reported
Vehicle Make/year:	Not reported
Vehicle License Number:	Not reported
Vehicle State:	Not reported
Vehicle Id Number:	Not reported
CA DOT PUC/ICC Number:	Not reported
Company Name:	Not reported
Reporting Officer Name/ID:	Not reported
Report Date:	Not reported
Facility Telephone:	Not reported
Waterway Involved:	No
Waterway:	Not reported
Spill Site:	Not reported
Cleanup By:	Responsible Party
Containment:	Not reported
What Happened:	Not reported
Type:	Not reported
Measure:	Not reported
Other:	Not reported
Date/Time:	Not reported
Year:	1999
Agency:	GeoMatrix Consultants
Incident Date:	12/7/199912:00:00 AM
Admin Agency:	Corona Fire Department
Amount:	Not reported
Contained:	Yes
Site Type:	Industrial Plant
E Date:	Not reported
Substance:	Diesel
Unknown:	0
Substance #2:	Not reported
Substance #3:	Not reported
Evacuations:	0
Number of Injuries:	0
Number of Fatalities:	0
#1 Pipeline:	Not reported
#2 Pipeline:	Not reported

PACIFIC CLAY PRODUCTS INC (Continued) **S104549216**

#3 Pipeline:	Not reported
#1 Vessel >= 300 Tons:	Not reported
#2 Vessel >= 300 Tons:	Not reported
#3 Vessel >= 300 Tons:	Not reported
Evacs:	Not reported
Injuries:	Not reported
Fatals:	Not reported
Comments:	Not reported
Description:	Encountered spillage during excavation at a construction site. Unknown source.

CERS TANKS:

Site ID:	209723
CERS ID:	SL208433898
Site Name:	MURDOCK DEVELOPMENT PROPERTY
CERS Description:	Cleanup Program Site
Site ID:	208357
CERS ID:	T10000000196
Site Name:	GATEWAY BUSINESS PARK
CERS Description:	Cleanup Program Site
Site ID:	82109
CERS ID:	10161483
Site Name:	VERIZON WIRELESS: CAJALCO
CERS Description:	Chemical Storage Facilities

Violations:

Site ID:	82109
Site Name:	Verizon Wireless: Cajalco
Violation Date:	10-20-2017
Citation:	HSC 6.95 25508.2 - California Health and Safety Code, Chapter 6.95, Section(s) 25508.2
Violation Description:	Failure to annually review and electronically certify that the business plan is complete and accurate on or before the annual due date.
Violation Notes:	Returned to compliance on 01/25/2018.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	82109
Site Name:	Verizon Wireless: Cajalco
Violation Date:	08-09-2017
Citation:	HSC 6.95 25508.2 - California Health and Safety Code, Chapter 6.95, Section(s) 25508.2
Violation Description:	Failure to annually review and electronically certify that the business plan is complete and accurate on or before the annual due date.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	82109
Site Name:	Verizon Wireless: Cajalco
Violation Date:	09-12-2017

PACIFIC CLAY PRODUCTS INC (Continued) **S104549216**

Citation:	HSC 6.95 25508.2 - California Health and Safety Code, Chapter 6.95, Section(s) 25508.2
Violation Description:	Failure to annually review and electronically certify that the business plan is complete and accurate on or before the annual due date.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS

Evaluation:

Eval General Type:	Other/Unknown
Eval Date:	09-12-2017
Violations Found:	Yes
Eval Type:	Other, not routine, done by local agency
Eval Notes:	Not reported
Eval Division:	Riverside County Department of Env Health
Eval Program:	HMRRP
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	03-30-2017
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Riverside County Department of Env Health
Eval Program:	HMRRP
Eval Source:	CERS

Eval General Type:	Other/Unknown
Eval Date:	08-09-2017
Violations Found:	Yes
Eval Type:	Other, not routine, done by local agency
Eval Notes:	Not reported
Eval Division:	Riverside County Department of Env Health
Eval Program:	HMRRP
Eval Source:	CERS

Eval General Type:	Other/Unknown
Eval Date:	10-20-2017
Violations Found:	Yes
Eval Type:	Other, not routine, done by local agency
Eval Notes:	Not reported
Eval Division:	Riverside County Department of Env Health
Eval Program:	HMRRP
Eval Source:	CERS

Affiliation:

Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503

PACIFIC CLAY PRODUCTS INC (Continued) **S104549216**

Affiliation Phone:	(951) 358-5055
Affiliation Type Desc:	Document Preparer
Entity Name:	Myrna Allende
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	Verizon Wireless
Entity Title:	Not reported
Affiliation Address:	15505 Sand Canyon Avenue, MS D-104
Affiliation City:	Irvine
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92618
Affiliation Phone:	(949) 286-7000
Affiliation Type Desc:	Identification Signer
Entity Name:	Myrna Allende
Entity Title:	Regulatory Specialist
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Operator
Entity Name:	Verizon Wireless
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(949) 286-7000
Affiliation Type Desc:	Environmental Contact
Entity Name:	Environmental Compliance
Entity Title:	Not reported
Affiliation Address:	15505 Sand Canyon Avenue, MS D-104
Affiliation City:	Irvine
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92618
Affiliation Phone:	Not reported
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	15505 Sand Canyon Avenue, MS D-104
Affiliation City:	Irvine

PACIFIC CLAY PRODUCTS INC (Continued) **S104549216**

Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92618
Affiliation Phone:	Not reported
Affiliation Type Desc:	Parent Corporation
Entity Name:	Verizon Wireless [Southern California]
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Count: 0 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
		NO SITES FOUND			

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 04/03/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/05/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 35

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 35

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 02/22/2019
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 41

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/10/2019
Next Scheduled EDR Contact: 08/26/2019
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/31/2019
Date Data Arrived at EDR: 02/04/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 32

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/29/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/31/2019
Date Data Arrived at EDR: 02/04/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 32

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/29/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/26/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 36

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 01/28/2019
Date Data Arrived at EDR: 01/29/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/30/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 01/28/2019
Date Data Arrived at EDR: 01/29/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/30/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/11/2019
Date Data Arrived at EDR: 02/12/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 21

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/14/2019
Next Scheduled EDR Contact: 08/26/2019
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)

Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 12/11/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Quarterly

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 10/10/2018
Date Data Arrived at EDR: 03/08/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/16/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 02/19/2019
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 11/01/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 09/24/2018
Date Data Arrived at EDR: 03/12/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 50
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 10/13/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 10/12/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/17/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)

Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 05/15/2017
Date Data Arrived at EDR: 05/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 136

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/25/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Varies

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases

UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/13/2019
Date Made Active in Reports: 04/03/2019
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Varies

UST: Active UST Facilities

Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 12/11/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Semi-Annually

MILITARY UST SITES: Military UST Sites (GEOTRACKER)

Military ust sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

AST: Aboveground Petroleum Storage Tank Facilities

A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/16/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 10/10/2018
Date Data Arrived at EDR: 03/08/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 54

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 10/17/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 11/07/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 11/01/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 10/12/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 09/24/2018
Date Data Arrived at EDR: 03/12/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 50

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 10/03/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 01/28/2019
Date Data Arrived at EDR: 01/29/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/30/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Quarterly

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/26/2019
Date Made Active in Reports: 04/29/2019
Number of Days to Update: 34

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 12/17/2018
Date Data Arrived at EDR: 12/18/2018
Date Made Active in Reports: 01/11/2019
Number of Days to Update: 24

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/19/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 04/25/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/13/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 48

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 03/26/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 34

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 05/09/2019
Next Scheduled EDR Contact: 08/26/2019
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land

A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 04/23/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 02/24/2019
Date Data Arrived at EDR: 02/26/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 50

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 01/28/2019
Date Data Arrived at EDR: 01/29/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/30/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/12/2018
Date Made Active in Reports: 08/06/2018
Number of Days to Update: 55

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 05/02/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 04/09/2019
Date Data Arrived at EDR: 04/11/2019
Date Made Active in Reports: 05/08/2019
Number of Days to Update: 27

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 04/11/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Quarterly

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/24/2019
Date Data Arrived at EDR: 02/26/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 50

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Quarterly

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 02/21/2019
Date Data Arrived at EDR: 02/22/2019
Date Made Active in Reports: 04/15/2019
Number of Days to Update: 52

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Varies

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 12/04/2018
Date Data Arrived at EDR: 12/06/2018
Date Made Active in Reports: 12/14/2018
Number of Days to Update: 8

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing
Aboveground storage tank sites

Date of Government Version: 09/11/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/11/2018
Number of Days to Update: 29

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 05/02/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Varies

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CERS TANKS: California Environmental Reporting System (CERS) Tanks
List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 04/09/2019
Date Data Arrived at EDR: 04/11/2019
Date Made Active in Reports: 05/08/2019
Number of Days to Update: 27

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 04/11/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Quarterly

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 02/28/2019
Date Data Arrived at EDR: 03/01/2019
Date Made Active in Reports: 04/02/2019
Number of Days to Update: 32

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 06/03/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 35

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 03/04/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 27

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/26/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 49

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 10/24/2018
Date Data Arrived at EDR: 01/24/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 40

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Quarterly

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 03/07/2019
Date Data Arrived at EDR: 04/03/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 50

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 05/21/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/12/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/12/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/13/2019
Next Scheduled EDR Contact: 08/26/2019
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/26/2019
Date Made Active in Reports: 05/07/2019
Number of Days to Update: 42
Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88
Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 05/06/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73
Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 05/10/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 198
Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/22/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 01/10/2018
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 2
Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/24/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 35

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 04/25/2019
Date Data Arrived at EDR: 05/02/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 05/10/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 03/20/2019
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 34

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/10/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 04/08/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016
Date Data Arrived at EDR: 09/08/2016
Date Made Active in Reports: 10/21/2016
Number of Days to Update: 43

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data

A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List

A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 05/24/2017
Date Data Arrived at EDR: 11/30/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 15

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 04/02/2019
Date Data Arrived at EDR: 04/02/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 42

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/02/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data
Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 12/03/2018
Date Data Arrived at EDR: 01/29/2019
Date Made Active in Reports: 03/21/2019
Number of Days to Update: 51

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 04/30/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 30

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/05/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/11/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 05/02/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 06/23/2017
Date Data Arrived at EDR: 10/11/2017
Date Made Active in Reports: 11/03/2017
Number of Days to Update: 23

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 26

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 11/27/2018
Date Data Arrived at EDR: 02/27/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 33

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 05/29/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/31/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/31/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 03/27/2019
Date Data Arrived at EDR: 03/28/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 34

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 03/21/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 02/15/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 03/15/2019
Number of Days to Update: 10

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Quarterly

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 04/07/2019
Date Data Arrived at EDR: 04/09/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 04/09/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 01/17/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 74

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Varies

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 71

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 02/19/2019
Date Data Arrived at EDR: 02/21/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 39

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 05/21/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/26/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 36

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

CUPA SAN FRANCISCO CO: CUPA Facility Listing

Cupa facilities

Date of Government Version: 04/18/2019
Date Data Arrived at EDR: 04/19/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 11

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Varies

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing

list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 01/23/2019
Date Data Arrived at EDR: 02/26/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 34

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 05/14/2019
Next Scheduled EDR Contact: 08/26/2019
Data Release Frequency: Varies

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 03/19/2019
Date Data Arrived at EDR: 03/22/2019
Date Made Active in Reports: 04/09/2019
Number of Days to Update: 18

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 05/23/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 03/01/2019
Date Data Arrived at EDR: 04/25/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 35

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 06/03/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Annually

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 02/27/2019
Date Data Arrived at EDR: 02/28/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 32

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 06/03/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Varies

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/20/2018
Date Made Active in Reports: 08/06/2018
Number of Days to Update: 47

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 03/22/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 11/01/2018
Date Data Arrived at EDR: 11/02/2018
Date Made Active in Reports: 12/13/2018
Number of Days to Update: 41

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/14/2019
Next Scheduled EDR Contact: 08/26/2019
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 01/10/2019
Date Data Arrived at EDR: 01/23/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 41

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 02/15/2019
Date Data Arrived at EDR: 02/19/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 14

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/09/2019
Next Scheduled EDR Contact: 08/26/2019
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 04/09/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 50

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 02/19/2019
Date Data Arrived at EDR: 02/20/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 13

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 05/21/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 02/19/2019
Date Data Arrived at EDR: 02/20/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 13

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/21/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/08/2019
Date Data Arrived at EDR: 04/09/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 51

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/09/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing

A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/12/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 34

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing

The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 02/20/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 04/02/2019
Number of Days to Update: 28

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 02/11/2019
Date Data Arrived at EDR: 02/12/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 23

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/14/2019
Next Scheduled EDR Contact: 08/26/2019
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 03/04/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 04/05/2019
Number of Days to Update: 31

Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/13/2019
Date Made Active in Reports: 04/29/2019
Number of Days to Update: 47

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 03/18/2019
Date Data Arrived at EDR: 03/19/2019
Date Made Active in Reports: 04/29/2019
Number of Days to Update: 41

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: No Update Planned

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 04/27/2018
Date Data Arrived at EDR: 06/13/2018
Date Made Active in Reports: 07/17/2018
Number of Days to Update: 34

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing

Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 07/11/2018
Date Made Active in Reports: 09/13/2018
Number of Days to Update: 64

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 04/12/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Varies

WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Quarterly

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)

Military privatized sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)

Projects sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing

In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/13/2019
Date Made Active in Reports: 04/29/2019
Number of Days to Update: 47

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System

The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 03/05/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 04/02/2019
Number of Days to Update: 28

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 04/09/2019
Date Data Arrived at EDR: 04/11/2019
Date Made Active in Reports: 05/08/2019
Number of Days to Update: 27

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 04/11/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)

Produced water ponds sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)

Sampling point - public sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)

Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 01/07/2019
Date Data Arrived at EDR: 01/08/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 59

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/08/2019
Next Scheduled EDR Contact: 04/24/2047
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List

Cupa Facility List

Date of Government Version: 01/07/2019
Date Data Arrived at EDR: 01/08/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 58

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 06/03/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 04/08/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/02/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 27

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 02/27/2019
Date Data Arrived at EDR: 02/28/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 32

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 02/14/2019
Date Data Arrived at EDR: 02/19/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 17

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 04/29/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 02/20/2019
Date Data Arrived at EDR: 05/01/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 29

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 04/25/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 02/27/2019
Date Data Arrived at EDR: 02/28/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 32

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 04/29/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 04/10/2019
Date Data Arrived at EDR: 04/11/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 19

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 03/29/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 12/11/2018
Date Data Arrived at EDR: 12/13/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 33

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/20/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 01/18/2019
Date Data Arrived at EDR: 01/23/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 41

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INYO COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

KERN COUNTY:

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 01/28/2019
Date Data Arrived at EDR: 02/07/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 29

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 05/02/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 05/16/2019
Date Data Arrived at EDR: 05/17/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 13

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 02/08/2019
Date Data Arrived at EDR: 02/12/2019
Date Made Active in Reports: 03/12/2019
Number of Days to Update: 28

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/17/2019
Date Data Arrived at EDR: 01/18/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 46

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

LOS ANGELES COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

AOCONCERN: Key Areas of Concerns in Los Angeles County

San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: N/A
Telephone: N/A
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List

Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 12/19/2018
Date Data Arrived at EDR: 01/10/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 56

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 05/02/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities

Solid Waste Facilities in Los Angeles County.

Date of Government Version: 01/14/2019
Date Data Arrived at EDR: 01/15/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 51

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/16/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills

Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 01/15/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 51

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Varies

LOS ANGELES AST: Active & Inactive AST Inventory

A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 54

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 04/05/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills

This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 04/30/2012
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 42

Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 04/17/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory
A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 54
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 04/05/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory
A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 54
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 04/05/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 01/30/2019
Date Data Arrived at EDR: 02/01/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 34
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/16/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Semi-Annually

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 03/10/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 54
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Annually

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 10/02/2018
Date Data Arrived at EDR: 10/05/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 28
Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 02/20/2019
Date Data Arrived at EDR: 02/22/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 13

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 03/29/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/19/2019
Date Made Active in Reports: 05/08/2019
Number of Days to Update: 50

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 02/21/2019
Date Data Arrived at EDR: 02/26/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 34

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 05/23/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 02/05/2019
Date Data Arrived at EDR: 02/07/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 26

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 04/01/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 02/21/2019
Date Data Arrived at EDR: 02/22/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 14

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 05/20/2019
Date Data Arrived at EDR: 05/21/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 9

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 05/13/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/09/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 21

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/06/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/09/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 21

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/06/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 01/02/2019
Date Data Arrived at EDR: 02/05/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 31

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/07/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 02/28/2019
Date Data Arrived at EDR: 03/01/2019
Date Made Active in Reports: 04/12/2019
Number of Days to Update: 42
Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 06/03/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 01/14/2019
Date Data Arrived at EDR: 01/18/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 46
Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/12/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 18
Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 01/29/2019
Date Data Arrived at EDR: 01/31/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 36
Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 11/07/2018
Date Data Arrived at EDR: 01/04/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 60
Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/02/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 11/07/2018
Date Data Arrived at EDR: 12/28/2018
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 67
Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/02/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/13/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 48

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 05/02/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 02/27/2019
Date Data Arrived at EDR: 02/28/2019
Date Made Active in Reports: 04/02/2019
Number of Days to Update: 33

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 05/06/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: Hazardous Materials Management Division Database
The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 03/04/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 04/02/2019
Number of Days to Update: 28

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities
San Diego County Solid Waste Facilities.

Date of Government Version: 04/18/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 56

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing
A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 03/06/2019
Date Data Arrived at EDR: 03/06/2019
Date Made Active in Reports: 04/29/2019
Number of Days to Update: 54

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

SAN DIEGO CO. SAM: Environmental Case Listing
The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24
Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 06/03/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

LUST SAN FRANCISCO: Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10
Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 05/02/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Quarterly

UST SAN FRANCISCO: Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/05/2018
Date Data Arrived at EDR: 11/06/2018
Date Made Active in Reports: 12/14/2018
Number of Days to Update: 38
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 05/02/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 02/13/2019
Date Data Arrived at EDR: 02/15/2019
Date Made Active in Reports: 03/14/2019
Number of Days to Update: 27
Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 03/04/2019
Date Data Arrived at EDR: 03/13/2019
Date Made Active in Reports: 04/29/2019
Number of Days to Update: 47

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 02/13/2019
Date Data Arrived at EDR: 02/19/2019
Date Made Active in Reports: 03/06/2019
Number of Days to Update: 15

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Annually

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 01/30/2019
Date Data Arrived at EDR: 02/01/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 34

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 03/05/2019
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 04/29/2019
Number of Days to Update: 53

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 06/03/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/05/2019
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 04/03/2019
Number of Days to Update: 27

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 06/03/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 03/18/2019
Date Data Arrived at EDR: 03/26/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 36

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 04/03/2019
Date Data Arrived at EDR: 04/11/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 19

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 04/08/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 12/11/2018
Date Data Arrived at EDR: 12/13/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 33

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 02/28/2019
Date Data Arrived at EDR: 03/01/2019
Date Made Active in Reports: 04/03/2019
Number of Days to Update: 33

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 06/03/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 12/13/2018
Date Data Arrived at EDR: 12/18/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 28

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 01/18/2019
Date Data Arrived at EDR: 01/23/2019
Date Made Active in Reports: 03/06/2019
Number of Days to Update: 42

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 12/26/2018
Date Data Arrived at EDR: 12/27/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 19

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 05/06/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 05/02/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 12/26/2018
Date Data Arrived at EDR: 01/24/2019
Date Made Active in Reports: 02/28/2019
Number of Days to Update: 35

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/23/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/29/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Annually

LUST VENTURA: Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/09/2019
Next Scheduled EDR Contact: 08/26/2019
Data Release Frequency: Quarterly

MED WASTE VENTURA: Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 03/26/2019
Date Data Arrived at EDR: 04/25/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 35

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 04/23/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 02/26/2019
Date Data Arrived at EDR: 03/13/2019
Date Made Active in Reports: 04/03/2019
Number of Days to Update: 21

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 12/26/2018
Date Data Arrived at EDR: 01/03/2019
Date Made Active in Reports: 01/16/2019
Number of Days to Update: 13

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 03/29/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 02/08/2019
Date Data Arrived at EDR: 02/12/2019
Date Made Active in Reports: 03/06/2019
Number of Days to Update: 22

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 04/25/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 02/11/2019
Date Data Arrived at EDR: 02/12/2019
Date Made Active in Reports: 03/04/2019
Number of Days to Update: 20

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/14/2019
Next Scheduled EDR Contact: 08/26/2019
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/10/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 01/30/2019
Date Made Active in Reports: 02/14/2019
Number of Days to Update: 15
Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/01/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 10/23/2018
Date Made Active in Reports: 11/27/2018
Number of Days to Update: 35
Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 02/23/2018
Date Made Active in Reports: 04/09/2018
Number of Days to Update: 45
Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/17/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/15/2018
Date Made Active in Reports: 07/09/2018
Number of Days to Update: 24
Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/11/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: PennWell Corporation
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.
Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.
Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.
Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

© 2015 TomTom North America, Inc. All rights reserved. This material is proprietary and the subject of copyright protection and other intellectual property rights owned by or licensed to Tele Atlas North America, Inc. The use of this material is subject to the terms of a license agreement. You will be held liable for any unauthorized copying or disclosure of this material.

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

BEDFORD MARKETPLACE - ARANTINE HILLS TRACT 8
INTERSECTIONS OF EAGLE GLEN PARKWAY / CAJALCO ROAD
CORONA, CA 92883

TARGET PROPERTY COORDINATES

Latitude (North):	33.81894 - 33° 49' 8.18''
Longitude (West):	117.521214 - 117° 31' 16.37''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	451763.8
UTM Y (Meters):	3742009.0
Elevation:	924 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5636469 CORONA SOUTH, CA
Version Date:	2012
East Map:	5636475 LAKE MATHEWS, CA
Version Date:	2012

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

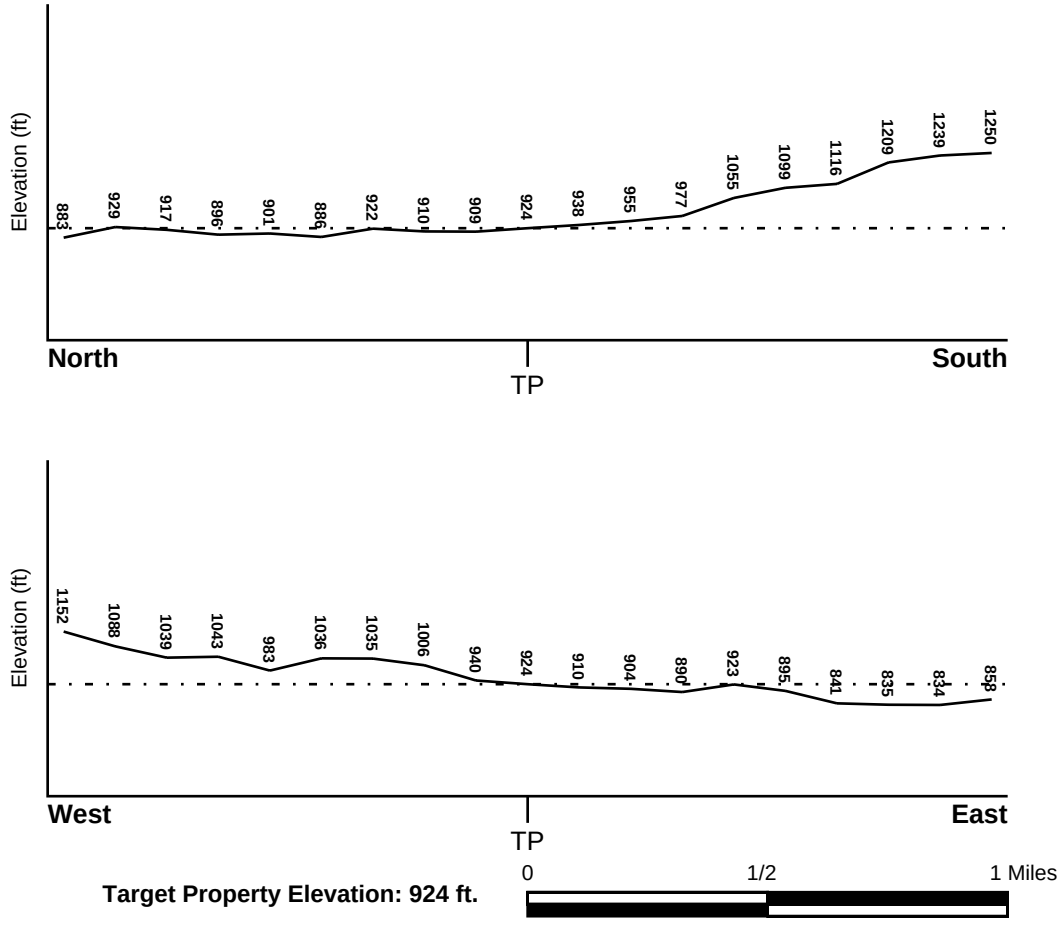
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General ENE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06065C1360G	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06065C1370G	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
NOT AVAILABLE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

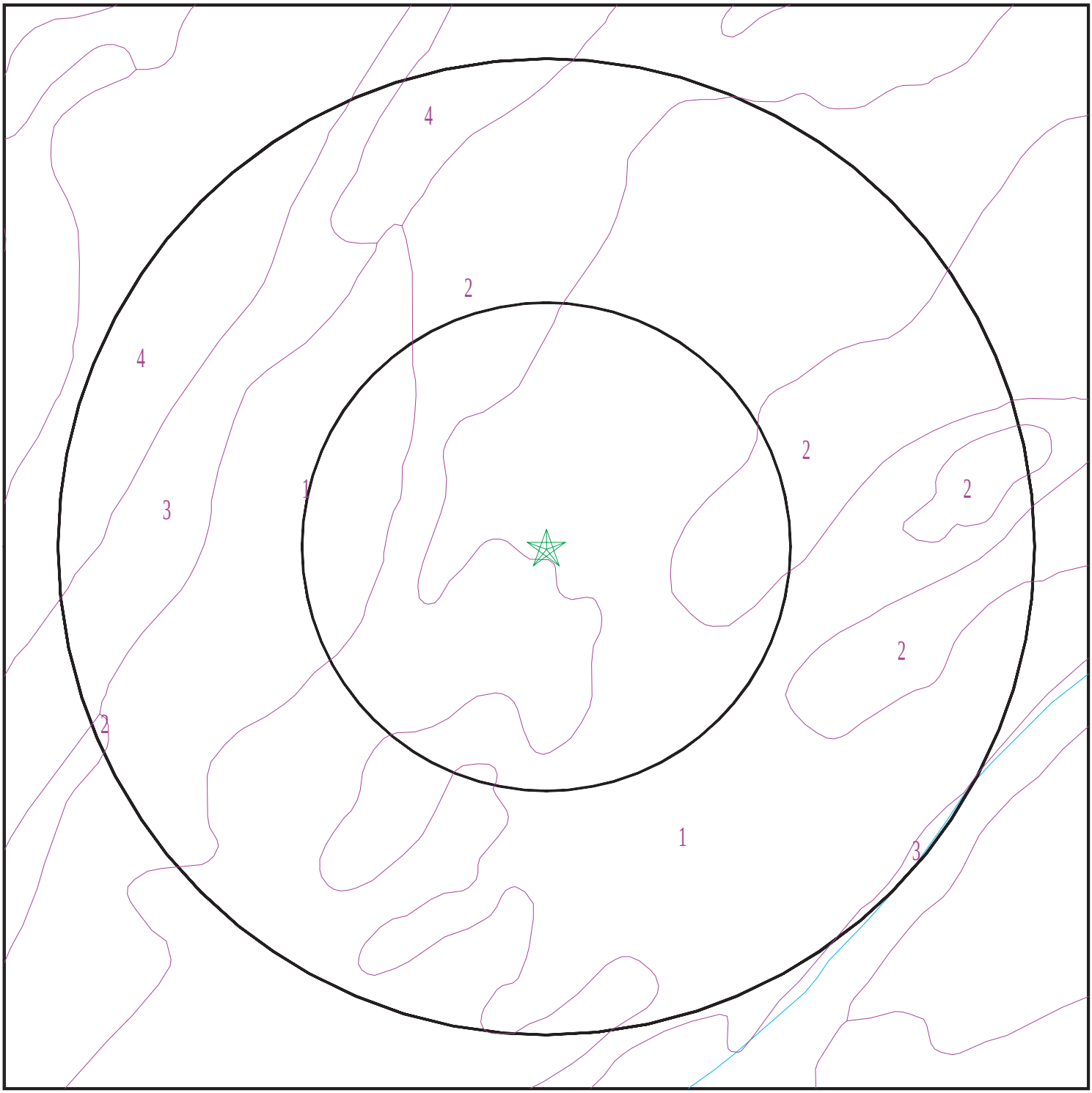
Era:	Mesozoic
System:	Lower Jurassic and Upper Triassic
Series:	Lower Mesozoic
Code:	lMze *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Eugeosynclinal Deposits

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 05672537.2r



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Bedford Marketplace - Arantine Hills Tract 8	CLIENT:	EBI Consulting
ADDRESS:	Intersections of Eagle Glen Parkway / Cajalco Road Corona CA 92883	CONTACT:	Production Manager
LAT/LONG:	33.81894 / 117.521214	INQUIRY #:	05672537.2r
		DATE:	June 04, 2019 11:39 am

Copyright © 2019 EDR, Inc. © 2015 TomTom Rel. 2015.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: CORTINA

Soil Surface Texture: cobbly loamy sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Excessively drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	22 inches	cobbly loamy sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Silty Gravel	Max: 141 Min: 42	Max: 8.4 Min: 5.6
2	22 inches	38 inches	stratified very cobbly loamy sand to very cobbly loam	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Silty Gravel	Max: 141 Min: 42	Max: 8.4 Min: 5.6
3	38 inches	59 inches	stratified very gravelly sand to very gravelly loamy sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Silty Gravel	Max: 141 Min: 42	Max: 8.4 Min: 5.6

Soil Map ID: 2

Soil Component Name: GARRETSON

Soil Surface Texture: gravelly very fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	gravelly very fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 7.8 Min: 6.1
2	9 inches	53 inches	gravelly loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 7.8 Min: 6.1
3	53 inches	72 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 7.8 Min: 6.1

Soil Map ID: 3

Soil Component Name: Terrace escarpments

Soil Surface Texture: gravelly very fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class:

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

No Layer Information available.

Soil Map ID: 4

Soil Component Name: ARBUCKLE

Soil Surface Texture: loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	11 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 7.8 Min: 5.6
2	11 inches	25 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 7.8 Min: 5.6
3	25 inches	44 inches	gravelly loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 7.8 Min: 5.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
4	44 inches	68 inches	stratified sandy loam to very gravelly sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 7.8 Min: 5.6

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
4	USGS40000138455	1/2 - 1 Mile ENE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	CADWR8000005736	1/2 - 1 Mile NE

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE DATABASE WELL INFORMATION

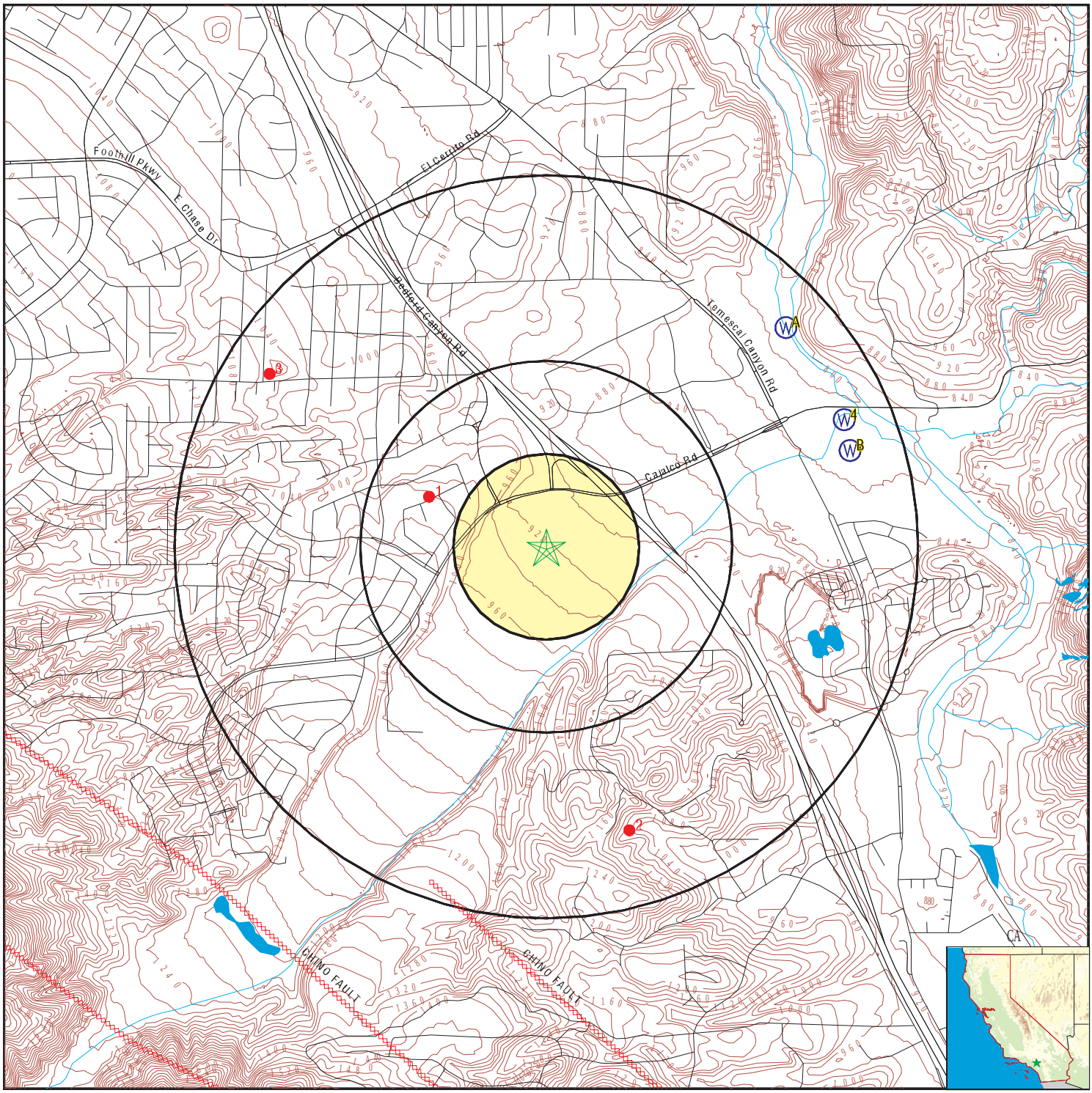
MAP ID	WELL ID	LOCATION FROM TP
B2	CADWR8000005707	1/2 - 1 Mile ENE
B3	CADWR8000005708	1/2 - 1 Mile ENE
A5	CADWR8000005740	1/2 - 1 Mile NE

OTHER STATE DATABASE INFORMATION

STATE OIL/GAS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	CAOG13000006404	1/4 - 1/2 Mile WNW
2	CAOG13000006373	1/2 - 1 Mile SSE
3	CAOG13000006359	1/2 - 1 Mile WNW

PHYSICAL SETTING SOURCE MAP - 05672537.2r



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	Bedford Marketplace - Arantine Hills Tract 8	CLIENT:	EBI Consulting
ADDRESS:	Intersections of Eagle Glen Parkway / Cajalco Road Corona CA 92883	CONTACT:	Production Manager
LAT/LONG:	33.81894 / 117.521214	INQUIRY #:	05672537.2r
		DATE:	June 04, 2019 11:39 am

Copyright © 2019 EDR, Inc. © 2015 TomTom Rel. 2015.

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A1
NE
1/2 - 1 Mile
Lower

CA WELLS **CADWR8000005736**

State Well #:	04S06W16C002S	Station ID:	46733
Well Name:	Flagler 3A Well	Well Use:	Observation
Well Type:	Single Well	Well Depth:	0
Basin Name:	Bedford-Coldwater	Well Completion Rpt #:	Not Reported

---

B2
ENE
1/2 - 1 Mile
Lower

CA WELLS **CADWR8000005707**

State Well #:	Not Reported	Station ID:	46730
Well Name:	Non-Potable Well #2	Well Use:	Irrigation
Well Type:	Single Well	Well Depth:	0
Basin Name:	Bedford-Coldwater	Well Completion Rpt #:	Not Reported

---

B3
ENE
1/2 - 1 Mile
Lower

CA WELLS **CADWR8000005708**

State Well #:	Not Reported	Station ID:	46729
Well Name:	Non-Potable Well #1	Well Use:	Irrigation
Well Type:	Single Well	Well Depth:	0
Basin Name:	Bedford-Coldwater	Well Completion Rpt #:	Not Reported

---

4
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS40000138455**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	004S006W16C001S	Type:	Well
Description:	Not Reported	HUC:	18070203
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	99
Well Depth Units:	ft	Well Hole Depth:	99
Well Hole Depth Units:	ft		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A5
NE
1/2 - 1 Mile
Lower

CA WELLS **CADWR8000005740**

State Well #:	04S06W16C003S	Station ID:	46732
Well Name:	Flagler 2A Well	Well Use:	Observation
Well Type:	Single Well	Well Depth:	0
Basin Name:	Bedford-Coldwater	Well Completion Rpt #:	Not Reported

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database EDR ID Number

1
WNW **OIL_GAS** **CAOG13000006404**
1/4 - 1/2 Mile

API #:	0406500129	Well #:	1
Well Status:	Plugged	Well Type:	DH
Operator Name:	Kenneth E. Reed	Lease Name:	Kincheloe
Field Name:	Any Field	Area Name:	Any Area
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

2
SSE **OIL_GAS** **CAOG13000006373**
1/2 - 1 Mile

API #:	0406500095	Well #:	1
Well Status:	Plugged	Well Type:	DH
Operator Name:	Max N. Hammerling	Lease Name:	Max N. Hammerling
Field Name:	Any Field	Area Name:	Any Area
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

3
WNW **OIL_GAS** **CAOG13000006359**
1/2 - 1 Mile

API #:	0406500081	Well #:	1
Well Status:	Idle	Well Type:	OG
Operator Name:	A. W. Duncan	Lease Name:	Lease by A. W. Duncan
Field Name:	Any Field	Area Name:	Any Area
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
92881	5	0

Federal EPA Radon Zone for RIVERSIDE County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for RIVERSIDE COUNTY, CA

Number of sites tested: 12

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.117 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.450 pCi/L	100%	0%	0%
Basement	1.700 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

© 2015 TomTom North America, Inc. All rights reserved. This material is proprietary and the subject of copyright protection and other intellectual property rights owned by or licensed to Tele Atlas North America, Inc. The use of this material is subject to the terms of a license agreement. You will be held liable for any unauthorized copying or disclosure of this material.

This Report contains certain products owned by or licensed by Tele Atlas North America, Inc. ("TANA") and licensed to EDR pursuant to an agreement between EDR and TANA (the "TANA Agreement"). Such products include the Dynamap® /2000 (commencing with the most current version, nationwide coverage, ArcInfo™ format, tiled by county, with semi−annual Updates) and are referred to in this Report as the "Licensed Products".

The use of the Licensed Products with a non−TANA map may result in increased variance between the location displayed on the map and ground truth location.

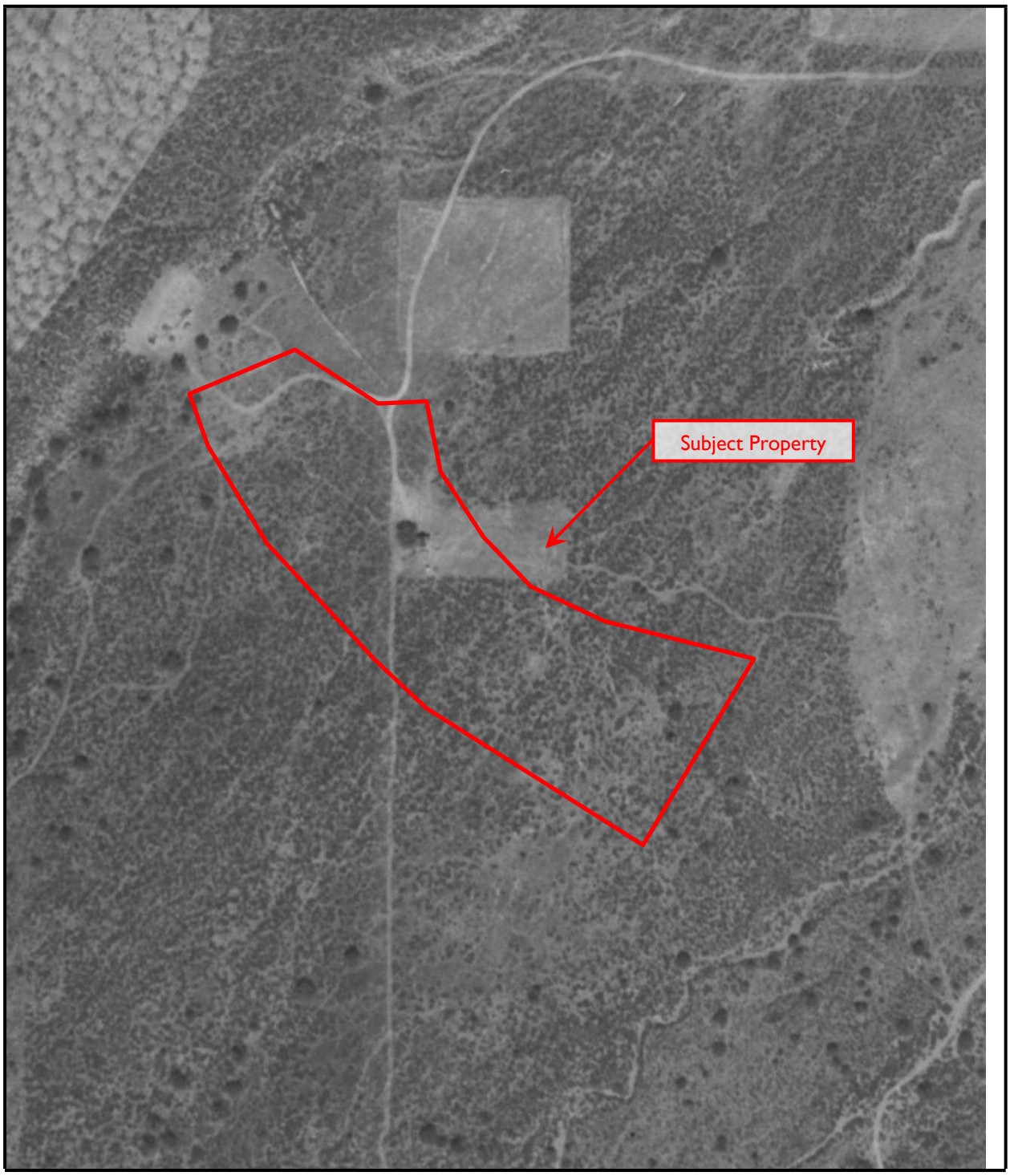
The recipient of the Report (hereinafter referred to as an "End User") shall use such Report solely for its internal purposes and not for resale.

U.S. GOVERNMENT RIGHTS. If End User is an agency, department, or other entity of the United States Government, or funded in whole or in part by the United States Government, then use, duplication, reproduction, release, modification, disclosure or transfer of this commercial product and accompanying documentation, is restricted in accordance with the LIMITED or RESTRICTED rights as described in DFARS 252.227−7014(a)(1) (JUN 1995) (DOD commercial computer software definition), DFARS 227.7202−1 (DOD policy on commercial computer software), FAR 52.227−19 (JUN 1987) (commercial computer software clause for civilian agencies), DFARS 252.227−7015 (NOV 1995) (DOD technical data − commercial items clause); FAR 52.227−14 Alternates I, II, and III (JUN 1987) (civilian agency technical data and noncommercial computer software clause); and/or FAR 12.211 and FAR 12.212 (commercial item acquisitions), as applicable. In case of conflict between any of the FAR and DFARS provisions listed herein, the construction that provides greater limitations on the Government's rights shall control. Contractor/manufacturer is Tele Atlas North America, Inc., 11 Lafayette Street, Lebanon, NH 03766−1445. Phone: 603.643. 0330. The Licensed Products are ©1984−2008 by Tele Atlas North America, Inc. ALL RIGHTS RESERVED. For purpose of any public disclosure provision under any federal, state or local law, it is agreed that the Licensed Products are a trade secret and a proprietary commercial product and not subject to disclosure.

If End User is an agency, department, or other entity of any State government, the United States Government or any other public entity or funded in whole or in part by the United States Government, such End User agrees to protect the Licensed Products from public disclosure and to consider the Licensed Products exempt from any statute, law, regulation, or code, including any Sunshine Act, Public Records Act, Freedom of Information Act, or equivalent, which permits public access and/or reproduction or use of the Licensed Products. In the event that such exemption is challenged under any such laws, any and all right to retain any copies or to use of the Licensed Products shall be terminated and considered immediately null and void. Any copies of the Licensed Products held by End User shall immediately be destroyed. If any court of competent jurisdiction considers this clause void and unenforceable, in whole or in part, for any reason, then all Licensed Products previously delivered to End User will be destroyed.

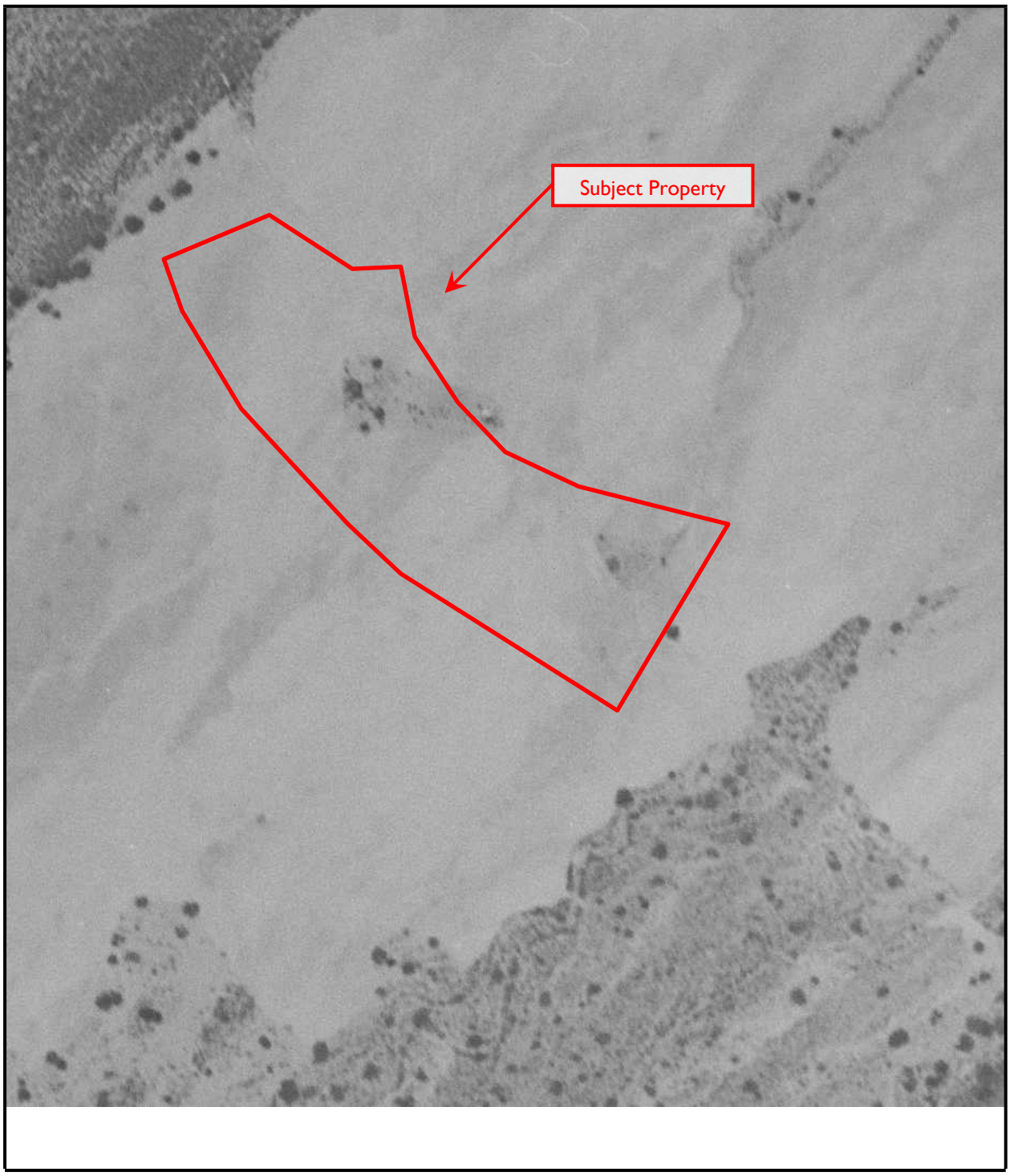
APPENDIX F

HISTORICAL DOCUMENTATION



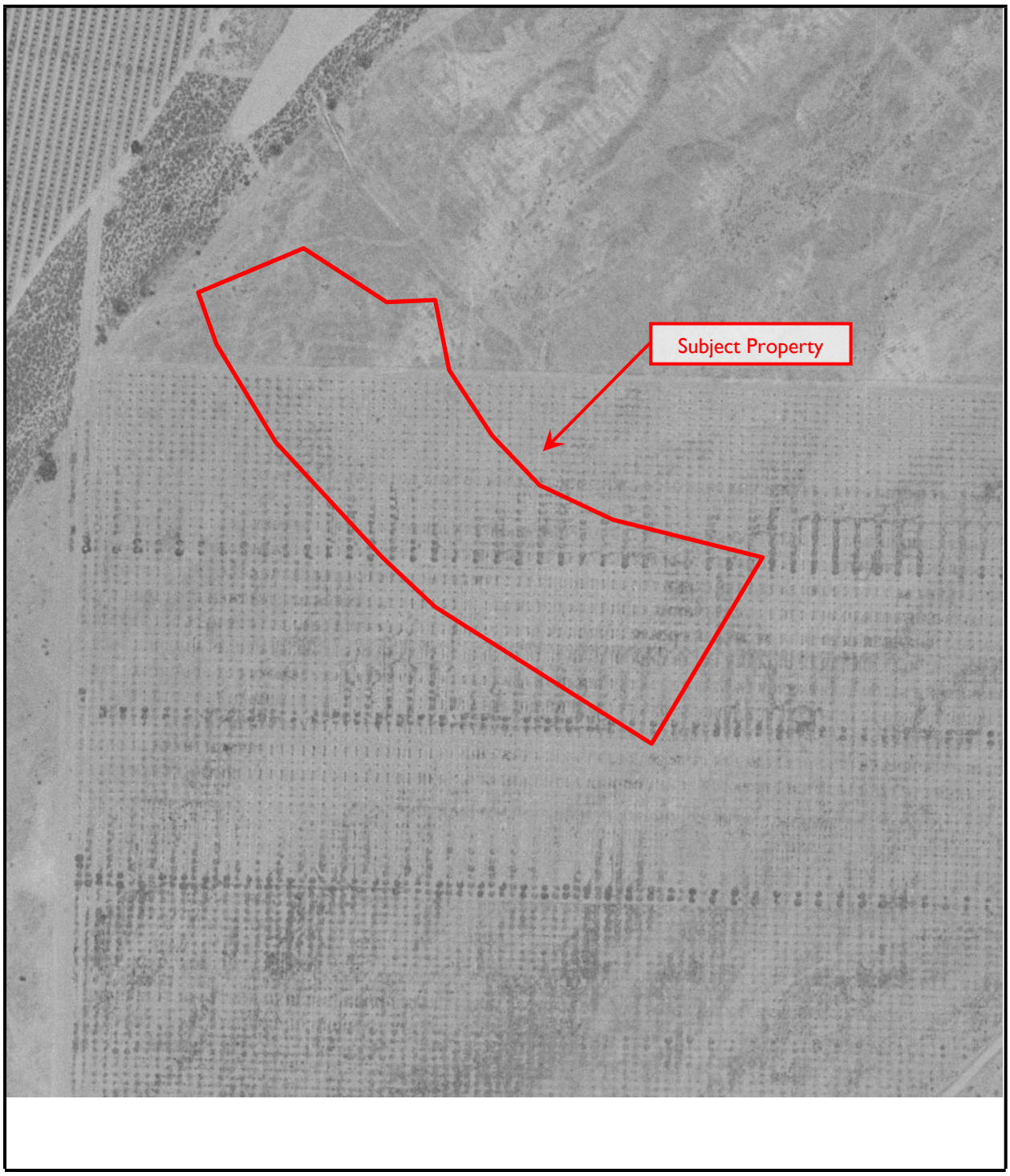
Aerial Photograph

Year: 1931



Aerial Photograph

Year: 1948



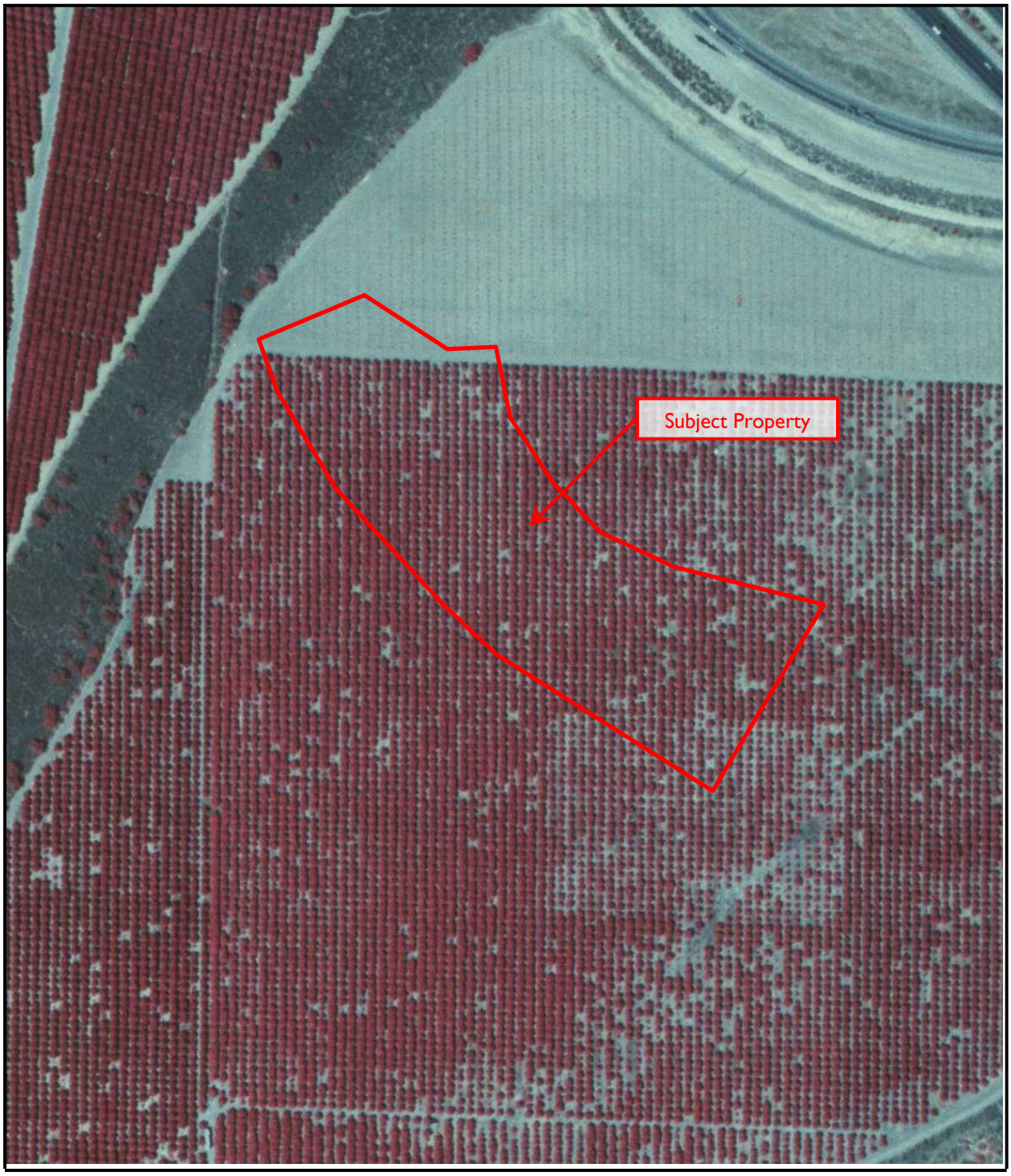
Aerial Photograph

Year: 1961



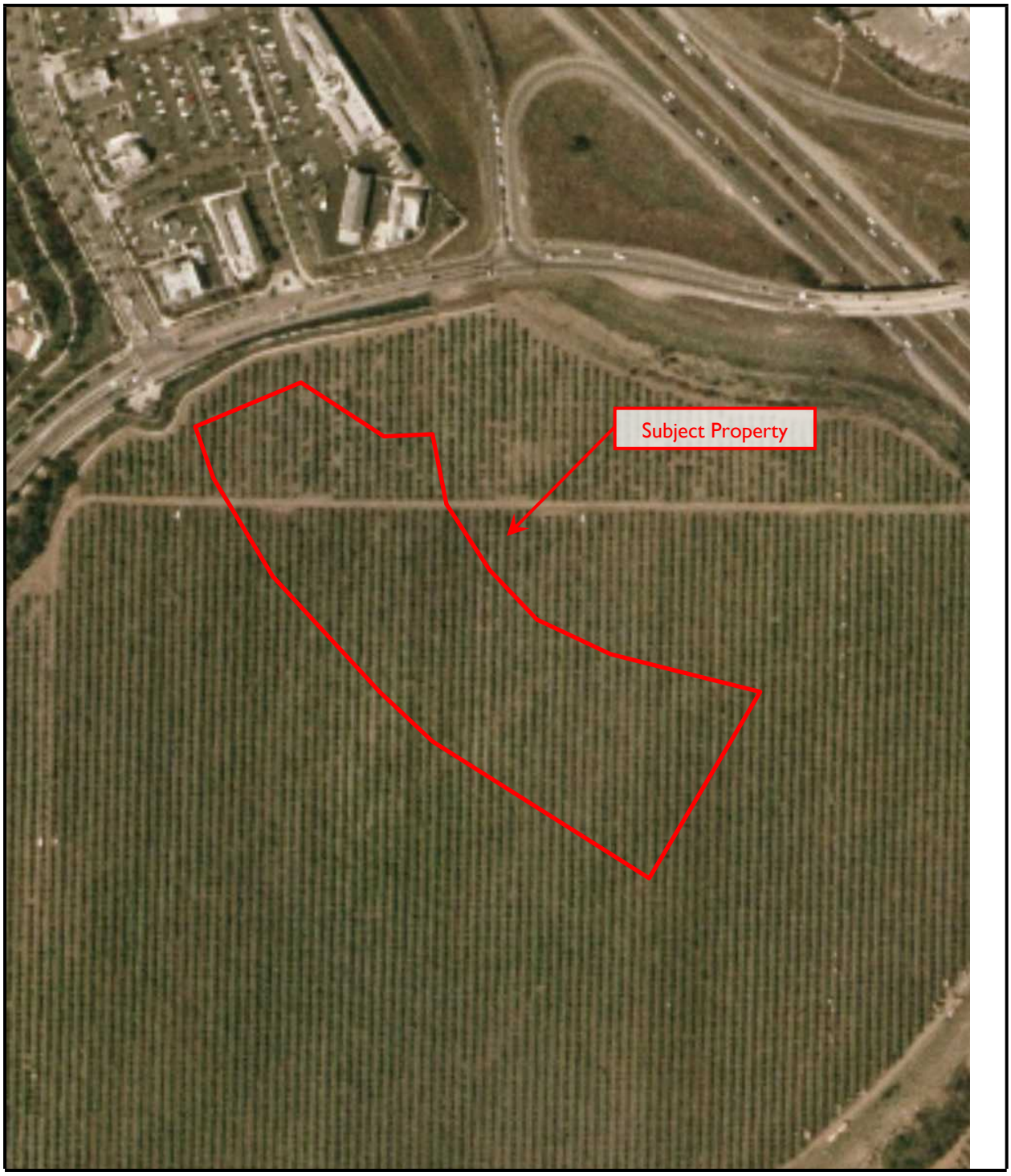
Aerial Photograph

Year: 1975



Aerial Photograph

Year: 1990



Aerial Photograph

Year: 2006



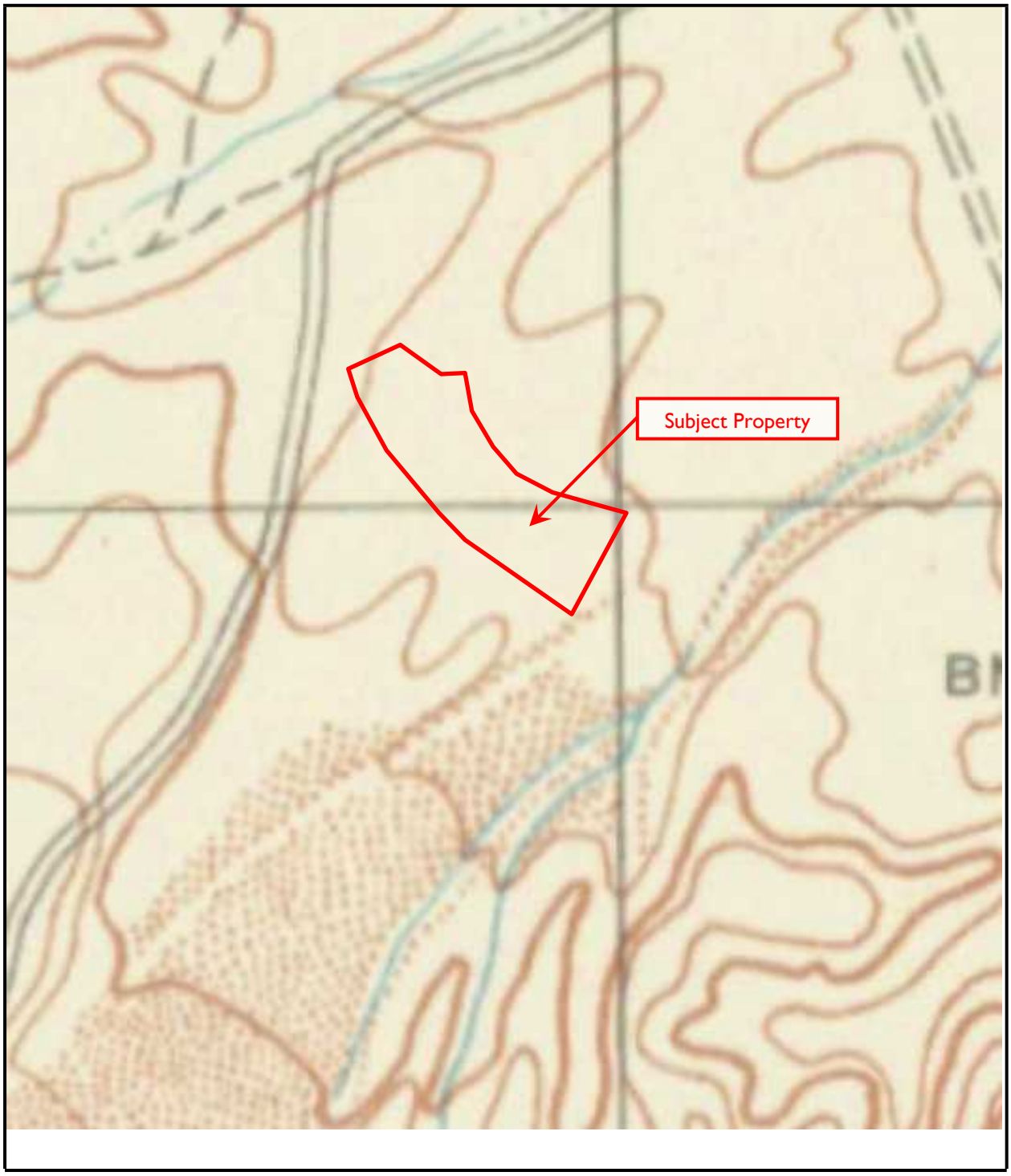
Aerial Photograph

Year: 2016



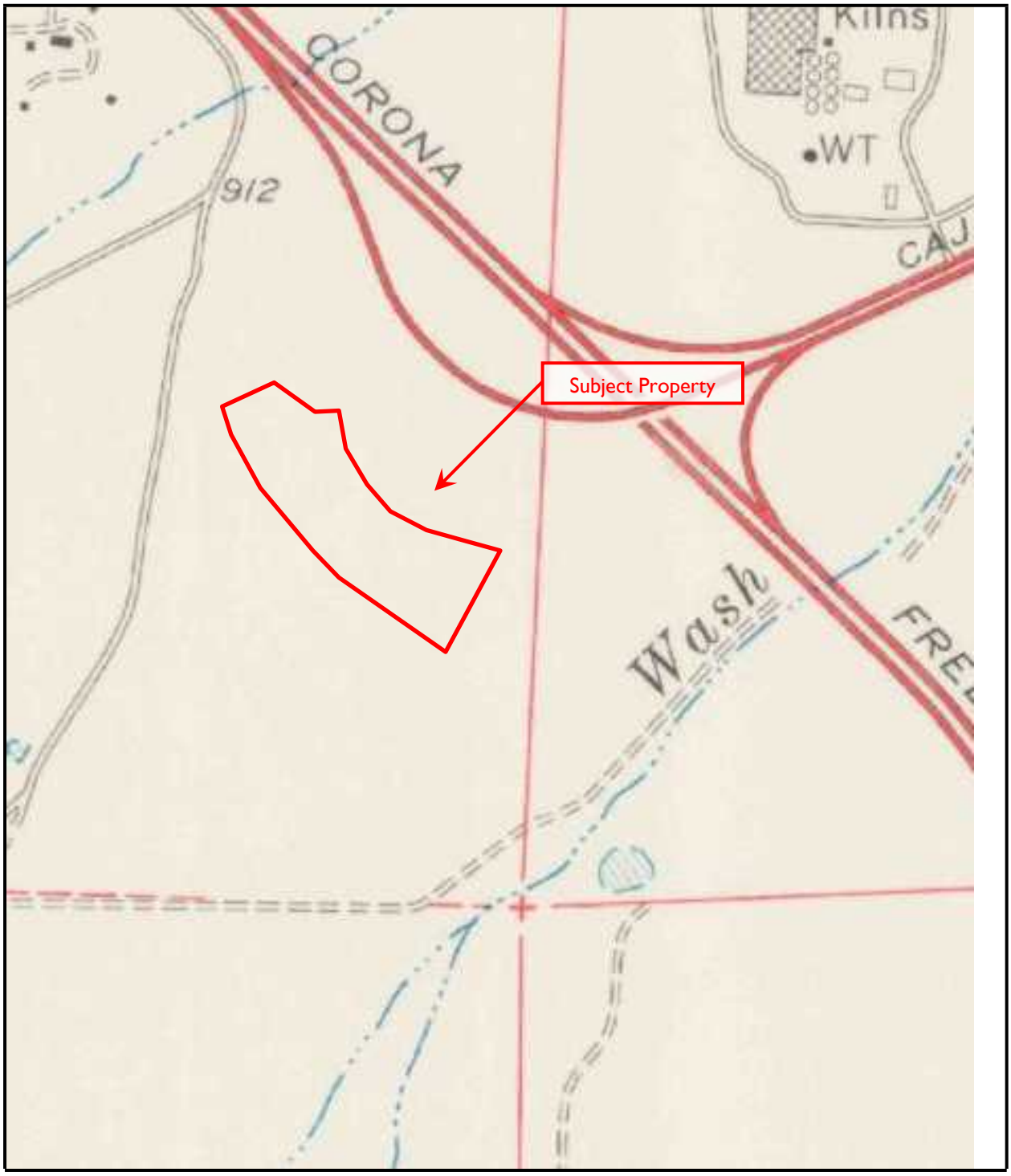
USGS Topographic Map

Year: 1902



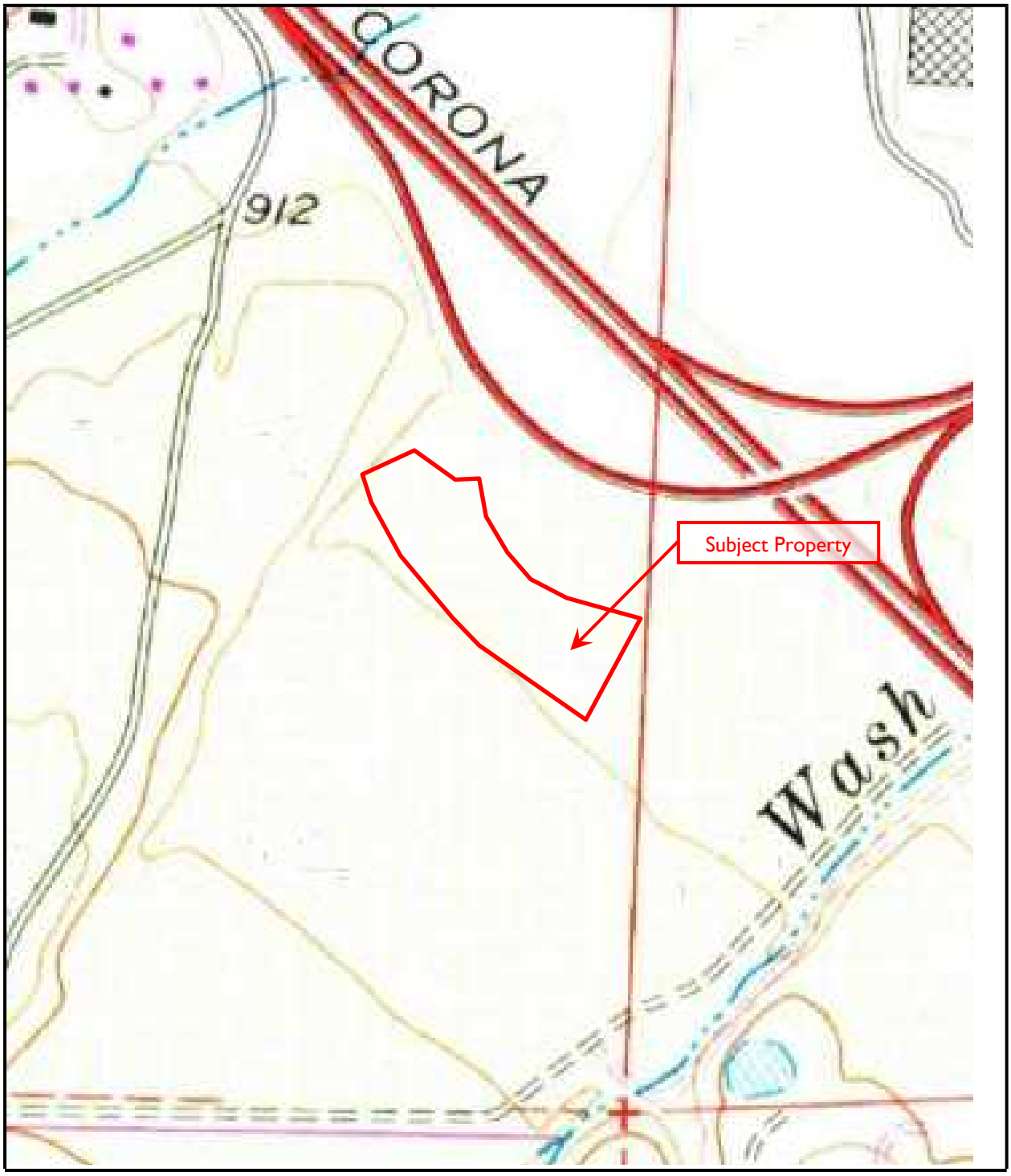
USGS Topographic Map

Year: 1947



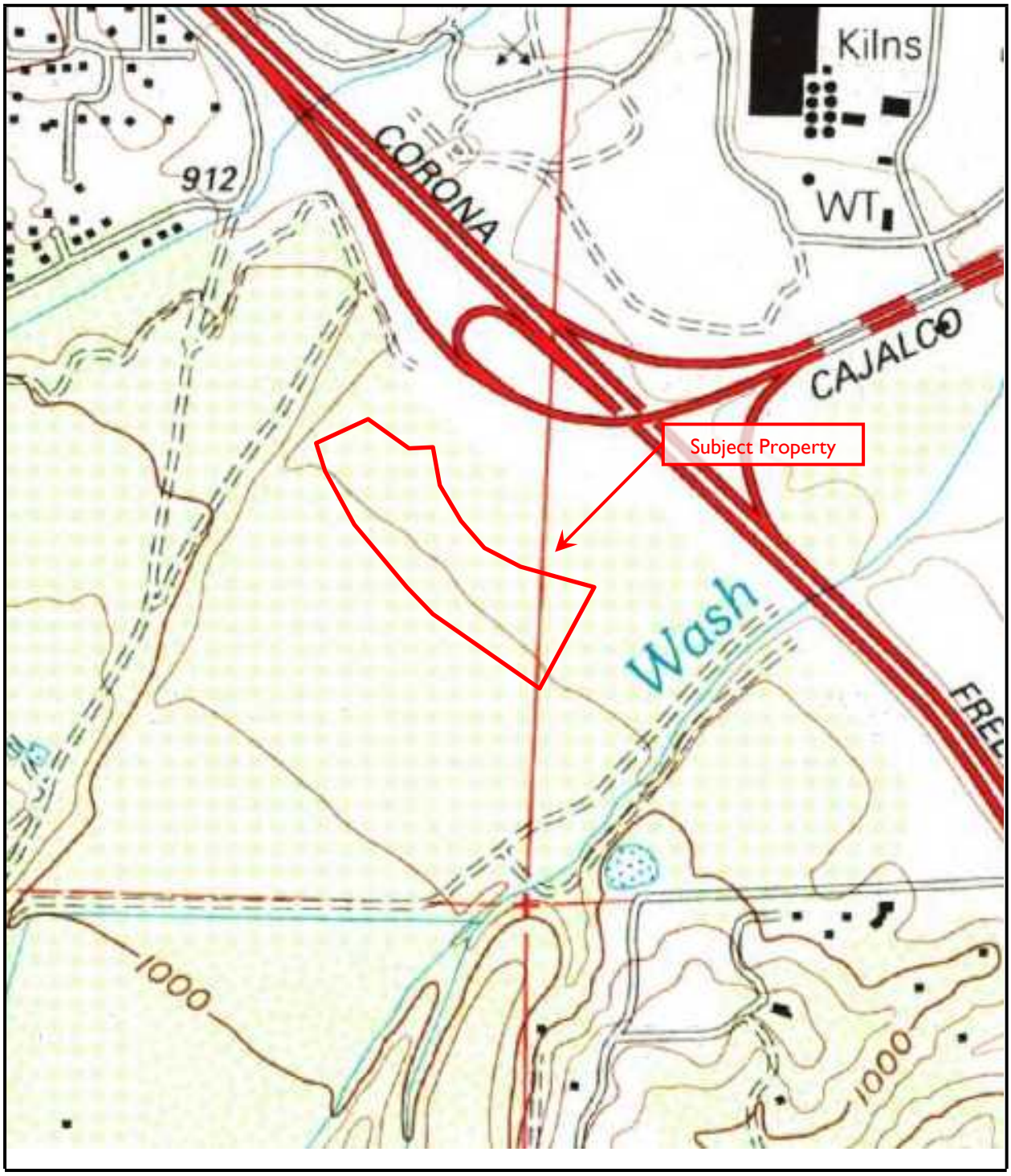
USGS Topographic Map

Year: 1967



USGS Topographic Map

Year: 1982



USGS Topographic Map

Year: 1997

Bedford Marketplace - Arantine Hills Tract 8
Intersections of Eagle Glen Parkway / Cajalco Road
Corona, CA 92883

Inquiry Number: 5672537.5
June 04, 2019

The EDR-City Directory Abstract

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Executive Summary

Findings

City Directory Images

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OR DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction orforecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2017 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc. or its affiliates is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Abstract is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Abstract includes a search and abstract of available city directory data. For each address, the directory lists the name of the corresponding occupant at five year intervals.

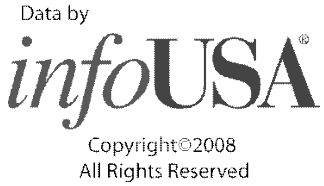
Business directories including city, cross reference and telephone directories were reviewed, if available, at approximately five year intervals for the years spanning 1921 through 2014. This report compiles information gathered in this review by geocoding the latitude and longitude of properties identified and gathering information about properties within 660 feet of the target property.

A summary of the information obtained is provided in the text of this report.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

EDR is licensed to reproduce certain City Directory works by the copyright holders of those works. The purchaser of this EDR City Directory Report may include it in report(s) delivered to a customer. Reproduction of City Directories without permission of the publisher or licensed vendor may be a violation of copyright.



Copyright©2008
All Rights Reserved

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

Year	Source	TP	Adjoining	Text Abstract	Source Image
2014	EDR Digital Archive	-	-	-	-
2010	EDR Digital Archive	-	-	-	-
2005	EDR Digital Archive	-	-	-	-
2002	SBC PACIFIC BELL	-	-	-	-
2001	Haines Company, Inc.	-	-	-	-
1996	Pacific Bell	-	-	-	-
1993	Pacific Bell	-	-	-	-
1990	Pacific Bell	-	-	-	-
1986	Pacific Bell Yellow Pages	-	-	-	-
1981	Pacific Telephone	-	-	-	-
1977	Pacific Telephone	-	-	-	-
1970	Pacific Telephone	-	-	-	-

EXECUTIVE SUMMARY

Year	Source	TP	Adjoining	Text Abstract	Source Image
1967	Luskey Brothers & Co.	-	-	-	-
1966	Luskey Brothers & Company Inc.	-	-	-	-
1961	Luskey Brothers & Co.	-	-	-	-
1960	Luskeys Brothers & Co., Publishers	-	-	-	-
1956	Luskey Brothers & Co.	-	-	-	-
1955	Luskeys Brothers Co., Publishers	-	-	-	-
1951	Los Angeles Directory Co.	-	-	-	-
1946	Southern California Telephone Company	-	-	-	-
1945	Los Angeles Directory Co.	-	-	-	-
1941	Pacific Directory Co.	-	-	-	-
1939	Los Angeles Directory Co.	-	-	-	-
1936	Los Angeles Directory Co.	-	-	-	-
1931	Southern California Telephone Co.	-	-	-	-
1930	Los Angeles Directory Co.	-	-	-	-
1927	Los Angeles Directory Co.	-	-	-	-
1925	Los Angeles Directory Co.	-	-	-	-
1924	Kaasen Directory Co.	-	-	-	-
1921	Riverside Directory Co.	-	-	-	-

FINDINGS

TARGET PROPERTY INFORMATION

ADDRESS

Intersections of Eagle Glen Parkway / Cajalco Road
Corona, CA 92883

FINDINGS DETAIL

Target Property research detail.

FINDINGS

ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

No Addresses Found

FINDINGS

TARGET PROPERTY: ADDRESS NOT IDENTIFIED IN RESEARCH SOURCE

The following Target Property addresses were researched for this report, and the addresses were not identified in the research source.

Address Researched	Address Not Identified in Research Source
Intersections of Eagle Glen Parkway / Cajalco Road	2014, 2010, 2005, 2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921

Bedford Marketplace - Arantine Hills Tract 8

Intersections of Eagle Glen Parkway / Cajalco Road

Corona, CA 92883

Inquiry Number: 5672537.3

June 04, 2019

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

06/04/19

Site Name:

Bedford Marketplace - Arantine
Intersections of Eagle Glen Par
Corona, CA 92883
EDR Inquiry # 5672537.3

Client Name:

EBI Consulting
21 B Street
Burlington, MA 01803
Contact: Production Manager

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by EBI Consulting were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # E42C-404B-993D

PO # NA

Project 1119003602

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: E42C-404B-993D

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

Limited Permission To Make Copies

EBI Consulting (the client) is permitted to make up to FIVE photocopies of this Sanborn Map transmittal and each fire insurance map accompanying this report solely for the limited use of its customer. No one other than the client is authorized to make copies. Upon request made directly to an EDR Account Executive, the client may be permitted to make a limited number of additional photocopies. This permission is conditioned upon compliance by the client, its customer and their agents with EDR's copyright policy; a copy of which is available upon request.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT. Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2019 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

APPENDIX G

TERMINOLOGY

TERMINOLOGY

The following provides definitions and descriptions of certain terms that may be used in this report. Italics indicate terms that are defined by ASTM Standard Practice E 1527-13. The Standard Practice should be referenced for further detail related definitions or additional explanation regarding the meaning of terms.

Recognized environmental condition (REC): The presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: 1) due to any release to the environment, 2) under conditions indicative of a release to the environment; or 3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not recognized environmental conditions.

De minimis conditions: Conditions that generally do not present threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be de minimis are not recognized environmental conditions or controlled recognized conditions.

Historical recognized environmental condition(s) (HREC): A past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted residential use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls). Before calling the past release a historical recognized environmental condition, the environmental professional must determine whether the past release is a recognized environmental condition at the time of the Phase I Environmental Site Assessment is conducted (for example, if there has been a change in the regulatory criteria). If the EP considers the past release to be a recognized environmental condition at the time of the Phase I ESA, the condition shall be included in the conclusions section of the report as a recognized environmental condition,

Controlled recognized environmental condition(s) (CREC): A recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by the regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls). A condition considered by the environmental professional to be a controlled recognized condition shall be listed in the findings section of the Phase I Environmental Site Assessment report, and as a recognized environmental condition in the conclusions section of the Phase I Environmental Site Assessment report. NOTE: A condition identified as a controlled recognized environmental condition does not imply that the environmental professional has evaluated or confirmed the adequacy, implementation, or continued effectiveness of the required control that has been, or is intended to be, implemented.

Material threat: A physically observable or obvious threat which is reasonably likely to lead to a release that, in the opinion of the environmental professional, is threatening and might result in impact to public health or the environment. An example might include an aboveground storage tank that contains a hazardous substance and which shows evidence of damage such that it may cause or contribute to tank integrity failure with a release of contents to the environment.

Material impact to public health or environment: A substantial risk of harm to public health or the environment resulting from the presence or likely presence of an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water, or surface water of the property. An example might include a release of a hazardous substance in concentrations exceeding applicable governmental agency standards under conditions that could reasonably and foreseeably result in substantial exposure to humans or

substantial damage to natural resources. The risk of that exposure or damage would represent a material impact to public health or environment.

General risk of enforcement action: The likelihood that an environmental condition would be subject to enforcement action if brought to the attention of appropriate governmental agencies. If the circumstances suggest an enforcement action would be more likely than not, then the condition is considered a general risk of enforcement action.

Data failure: A failure to achieve the historical research objectives, even after reviewing the standard historical sources that are reasonably ascertainable and likely to be useful. Data failure is one type of data gap.

Data gap: A lack of or inability to obtain information required by this practice despite good faith efforts by the environmental professional to gather such information. Data gaps may result from incompleteness in any of the activities required by this practice, including, but not limited to site reconnaissance (for example, an inability to conduct the site visit), and interviews (for example, an inability to interview the key site manager, regulatory officials, etc.).

APPENDIX F-2:

Phase I Environmental Site Assessment, Bedford Marketplace – RCTC Portion

This Page Intentionally Left Blank

Phase I Environmental Site Assessment

Bedford Marketplace - RCTCT Portion

Intersections of Eagle Glen Parkway / Cajalco Road / Bedford Canyon Road / I-15
Corona, California 92883

EBI Project No. 1119003601

Report Date: June 10, 2019



Prepared for:

Bedford Marketplace, LLC
5780 Fleet Street, Suite 225
Carlsbad 92008

Prepared by:

EBI Consulting
environmental | engineering | due diligence

EBI Consulting
environmental | engineering | due diligence

21 B Street
Burlington, MA 01803
Tel: (781) 273-2500
Fax: (781) 273-3311
www.ebiconsulting.com

June 10, 2019

Mr. Adam Knowlton
Bedford Marketplace, LLC
5780 Fleet Street, Suite 225
Carlsbad 92008

Subject: **Phase I Environmental Site Assessment, Bedford Marketplace - RCTCT Portion**
Intersections of Eagle Glen Parkway / Cajalco Road / Bedford Canyon Road / I-15, Corona, California 92883
EBI Project # 1119003601

To Whom It May Concern:

Attached please find *EBI's Phase I Environmental Site Assessment*, (the *Report*) for the above-mentioned asset (the Subject Property). During the property survey and research, *EBI's* property surveyor met with agents representing the Subject Property, or agents of the owner, and reviewed the property and its history. The *Report* was completed according to the terms and conditions authorized by you, the Client. This *Report* has been completed in general conformance with ASTM E 1527–13.

The purpose of this report is to acquire environmental information, observe the general condition and maintenance status of the Subject Property, to suggest remediation and/or maintenance practices considered customary for the Subject Property to continue in its current operation, compared to properties of similar age and condition, and to identify recognized environmental conditions in connection with the Subject Property described in this report.

This *Report* was performed utilizing methods and procedures consistent with established commercial practices and in conformance with industry standards. The suggestions represent *EBI Consulting's* opinion based on written, graphic or verbal information, the property condition and data available to us at the time of the survey. Factual information regarding operations, conditions or data provided by the Client, occupants, owner or their representative has been assumed to be correct and complete.

Reliance on the *Report* and the information contained herein shall mean (i) the *Report* may be relied upon by a lender to be selected by *Bedford Marketplace, LLC,* in determining whether to make a loan evidenced by a note secured by the Property ("the Mortgage Loan"); (ii) the *Report* may be relied upon by any purchaser in determining whether to purchase the Mortgage Loan (but not the Subject Property) from that lender, or an interest in the Mortgage Loan or securities backed or secured by the Mortgage Loan, and any rating agency rating securities representing an interest in the Mortgage Loan or backed or secured by the Mortgage Loan; (iii) the *Report* may be referred to in and included, in whole or in part, with materials offering for sale the Mortgage Loan or an interest in the Mortgage Loan or securities backed or secured by the Mortgage Loan; (iv) the *Report* speaks only as of its date in the absence of a specific written update of the *Report* signed and delivered by *EBI Consulting*.

There are no intended or unintended third party beneficiaries to this report, except as expressly stated herein.

EBI Consulting is an independent contractor, not an employee of either the issuer or the borrower, and its compensation was not based on the findings or recommendations made in the *Report* or on the closing of any business transaction.

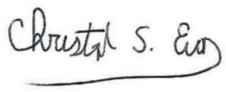
EBI Consulting declares that, to the best of our professional knowledge and belief, *EBI* meets the definition of Environmental Professional as defined in §312.10 of 40 CFR 312 and *EBI* has the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the Subject Property. *EBI Consulting* has developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

EBI Consulting
environmental | engineering | due diligence

21 B Street
Burlington, MA 01803
Tel: (781) 273-2500
Fax: (781) 273-3311
www.ebiconsulting.com

Thank you for the opportunity to prepare this *Report,* and assist you with this project. Please call us if you have any questions or if *EBI Consulting* may be of further assistance.

Respectfully Submitted,
EBI CONSULTING





Christopher Evans
Author / Project Scientist

Michael S. Ryniak
Reviewer / Program Director
mryniak@ebiconsulting.com

928.277.4669 (Arizona Time)

TABLE OF CONTENTS

EXECUTIVE SUMMARY **1**
1.0 INTRODUCTION **3**
1.1 Purpose 3
1.2 Scope-of-Services 3
1.3 Assumptions, Limitations and Exceptions 3
1.4 Special Terms and Conditions 5
1.5 Data Gaps 6
2.0 SUBJECT PROPERTY DESCRIPTION **7**
2.1 Ownership and Location 7
2.2 Subject Property Improvements 7
2.3 Current Use of the Subject Property 7
2.4 Municipal Services & Utilities 7
2.5 Adjoining Properties 7
3.0 USER PROVIDED INFORMATION **9**
3.1 Title Records 9
3.2 Environmental Liens and Activity and Use Limitations 9
3.3 Specialized Knowledge 9
3.4 Commonly Known or Reasonably Ascertainable Information 9
3.5 Valuation Reduction for Environmental Issues 9
3.6 Owner, Property Manager, and Occupant Information 9
3.7 Reason for Performing Phase I ESA 9
4.0 RECORDS REVIEW **10**
4.1 Standard Environmental Records 10
4.1.1 Federal Agency Database Records 11
4.1.2 State and Tribal Agency Database Records 12
4.1.3 Local Regulatory Agency Records 15
4.1.4 Vapor Migration 16
4.2 Physical Setting 16
4.2.1 Topography 16
4.2.2 Geology and Soils 17
4.2.3 Hydrogeology and Hydrology 17
4.3 Historical Use of the Subject Property and Adjoining Properties 17
4.3.1 Aerial Photographs 18
4.3.2 Fire Insurance Maps 18
4.3.3 Topographic Maps 18
4.3.4 Street Directories 19
4.3.5 Recorded Land Title Records 19
4.3.6 Property Tax Records 19
4.3.7 Environmental Liens and Activity and Use Limitations 19
4.3.8 Previous Environmental Reports 20
4.3.9 Other Historical Records and Interviews 20
5.0 SUBJECT PROPERTY RECONNAISSANCE **21**
5.1 Methodology and Limiting Conditions 21
5.2 Hazardous Substances and Petroleum Products 21
5.2.1 Hazardous Substances and Petroleum Products (Identified Uses) 21
5.2.2 Hazardous Substances and Petroleum Products (Unidentified Uses) 21
5.2.3 Unidentified Substances Containers 21
5.3 Waste Generation, Storage, and Disposal 21

5.4 Underground Storage Tanks (USTs) & Aboveground Storage Tanks (ASTs) 21
5.4.1 Existing Storage Tanks 21
5.4.2 Former Storage Tanks 21
5.5 Oil-Containing Equipment and Polychlorinated Biphenyls (PCBs) 22
5.6 Additional Site Conditions 22
6.0 INTERVIEWS 23
7.0 CONSIDERATIONS OUTSIDE THE SCOPE OF ASTM PRACTICE E 1527-13 24
7.1 Asbestos-Containing Material (ACM) 24
7.2 Radon 24
7.3 Lead-Based Paint (LBP) 24
7.4 Lead in Drinking Water 24
8.0 FINDINGS AND OPINIONS 26
9.0 RECOMMENDATIONS 27
10.0 REFERENCES 28

APPENDIX A PHOTOGRAPHS
APPENDIX B FIGURES
APPENDIX C PRE-SURVEY QUESTIONNAIRE AND OTHER RELEVANT DOCUMENTATION
APPENDIX D PROFESSIONAL QUALIFICATIONS
APPENDIX E REGULATORY DATABASE REPORT
APPENDIX F HISTORICAL DOCUMENTATION
APPENDIX G TERMINOLOGY

EXECUTIVE SUMMARY

At the request of Bedford Marketplace, LLC, EBI has performed a Phase I Environmental Site Assessment (ESA) of the property located at Intersections of Eagle Glen Parkway / Cajalco Road / Bedford Canyon Road / I-15 in Corona, California 92883, herein referred to as the Subject Property. The main objective of this ESA was to identify *recognized environmental conditions* in connection with the Subject Property, defined in ASTM Practice E 1527-13 as the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: 1) due to any release to the environment, 2) under conditions indicative of a release to the environment, or 3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not recognized environmental conditions. This ESA also includes a preliminary evaluation of certain potential environmental conditions that are outside the scope of ASTM Practice E 1527-13.

The Subject Property includes two contiguous, irregular-shaped parcels, totaling approximately 18.13 acres. The Subject Property is bound to the northeast by Interstate 15, to the southeast by undeveloped land, to the southwest by graded land, and to the northwest by Eagle Glen Parkway/Cajalco Road, and consists of a vacant, undeveloped land lot

Below is the Assessment Summary Table presenting our recommended actions for the Subject Property. EBI's Findings and Opinions are presented in Section 8.0, and recommendations for further action or investigation are presented in Section 9.0.

ASSESSMENT SUMMARY TABLE
BEDFORD MARKETPLACE - RCTCT PORTION
INTERSECTIONS OF EAGLE GLEN PARKWAY / CAJALCO ROAD / BEDFORD CANYON ROAD / I-15, CORONA, CALIFORNIA 92883

ASSESSMENT COMPONENT	SECTION	NO FURTHER ACTION	REC	HREC	CREC	OTHER	RECOMMENDED ACTION	ESTIMATED COST
Current Occupants/ Operations	**2.3, 5.0**	☒	☐	☐	☐	☐	No Further Action	
Historical Review	**4.3**	☒	☐	☐	☐	☐	No Further Action	
Regulatory Review	**4.1**	☒	☐	☐	☐	☐	No Further Action	
Potential Off-site Sources	**2.5, 4.1**	☒	☐	☐	☐	☐	No Further Action	
Hazardous Substances / Petroleum Products	**5.2**	☒	☐	☐	☐	☐	No Further Action	
Other Suspect Containers	**5.2**	☒	☐	☐	☐	☐	No Further Action	
Waste Generation	**5.3**	☒	☐	☐	☐	☐	No Further Action	
USTs	**5.4**	☒	☐	☐	☐	☐	No Further Action	
ASTs	**5.4**	☒	☐	☐	☐	☐	No Further Action	
PCBs	**5.5**	☒	☐	☐	☐	☐	No Further Action	
Additional Site Conditions	**5.6**	☒	☐	☐	☐	☐	No Further Action	

Asbestos Containing Materials	**7.1**	☒	☐	☐	☐	☐	No Further Action	
Radon	**7.2**	☒	☐	☐	☐	☐	No Further Action	
Lead-based Paint	**7.3**	☒	☐	☐	☐	☐	No Further Action	
Lead in Drinking Water	**7.4**	☒	☐	☐	☐	☐	No Further Action	
Vapor Migration	**4.1.4**	☒	☐	☐	☐	☐	No Further Action	

1.0 INTRODUCTION

This report documents the findings, opinions, and conclusions of a Phase I Environmental Site Assessment (ESA) of the property located at Intersections of Eagle Glen Parkway / Cajalco Road / Bedford Canyon Road / I-15 in Corona, California 92883.

1.1 PURPOSE

The purpose of this ESA was to identify *recognized environmental conditions* and certain environmental conditions outside the scope of ASTM Practice E 1527-13 in connection with the property at the time of the property reconnaissance.

1.2 SCOPE-OF-SERVICES

This ESA was conducted utilizing a standard of good commercial and customary practice that was consistent with the ASTM Practice E 1527-13. Any significant scope-of-work additions, deletions or deviations to ASTM Practice E 1527-13 are noted below or in the corresponding sections of this report. The scope-of-work for this assessment included an evaluation of the following:

- Physical characteristics of the Subject Property through a review of referenced sources for topographic, geologic, soils and hydrologic data.
- Subject Property history through a review of referenced sources such as land deeds, fire insurance maps, city directories, aerial photographs, prior reports, and interviews.
- Current Subject Property conditions, including observations and interviews regarding the following: the presence or absence of hazardous substances or petroleum products; generation, treatment, storage, or disposal of hazardous, regulated, or biomedical waste; equipment that utilizes oils which potentially contain PCBs; and storage tanks (aboveground and underground).
- Usage of surrounding area properties and the likelihood for releases of hazardous substances and petroleum products (if known and/or suspected) to migrate onto the Subject Property.
- Information in referenced environmental agency databases and local environmental records, within specified minimum search distances.
- Past ownership through a review of available prior reports and local municipal file review.

The scope-of-work also included consideration of the following potential environmental conditions that are outside the scope of ASTM Practice E 1527-13: asbestos-containing materials (ACM), lead-based paint (LBP), lead in drinking water, and radon.

1.3 ASSUMPTIONS, LIMITATIONS AND EXCEPTIONS

This Phase I Environmental Site Assessment (the report) has been prepared for the use of Bedford Marketplace, LLC, in accordance with our Standard Conditions for Engagement and Authorization Letter and Agreement for Environmental Services approved and signed by Bedford Marketplace, LLC (the Agreement), and with the limitations described below, all of which are integral parts of this report. A copy of the signed Standard Conditions For Engagement and Authorization Letter and Agreement for Environmental Services is maintained at the EBI Consulting office in Burlington, Massachusetts. To the

extent any provisions of this report conflict with the terms of the Agreement, the Agreement will control.

EBI has performed this Phase I Environmental Site Assessment in conformance with the scope and limitations of *ASTM Standard E 1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. This report was prepared with no exceptions or deletions from ASTM Standard E 1527-13.

This Phase I Environmental Site Assessment has been prepared to assess a parcel of commercial real estate with respect to the range of contaminants within the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601) and petroleum products. As such, this practice is intended to permit *Bedford Marketplace, LLC* to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on CERCLA liability: that is, the practices that constitute "all appropriate inquiry into the previous ownership and uses of the Subject Property consistent with good commercial or customary practice" as defined in 42 U.S.C. § 9601(35)(B).

In defining a standard of good commercial and customary practice for conducting an environmental site assessment of a parcel of property, the goal of the processes established by this practice is to identify *recognized environmental conditions*. The term recognized environmental conditions means the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property (1) due to a release to the environment, (2) under conditions that indicate an existing release or a past release, or (3) under conditions that pose a material threat of a future release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term does not include *de minimis conditions* that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

The information reported was obtained through sources deemed reasonably ascertainable, as defined in ASTM Standard E 1527-13; a visual site survey of areas readily observable, easily accessible or made accessible by the Subject Property contact and interviews with owners, agents, occupants, or other appropriate persons involved with the Subject Property and a review of standard federal, state, and tribal environmental record sources. Municipal information was obtained through review of reasonably ascertainable standard government record sources and interviews with the authorities having jurisdiction over the Subject Property. Findings, conclusions, and recommendations included in the report are based on our visual observations in the field, the standard environmental record sources and municipal information reasonably obtained, information provided by the Client, and/or a review of readily available and supplied documents and drawings. EBI relies completely on the information, whether written, graphic, or verbal, provided by the Subject Property contact or as shown on any documents reviewed or received from the Subject Property contact, owner or agent, or municipal source, and assumes that information to be true and correct unless the information is known to be inaccurate or if it is obvious, based on other information obtained as part of the assessment, that the information is not accurate. Although there may have been some degree of overlap in the information provided by these various sources, EBI did not attempt to verify independently the accuracy or completeness of all information reviewed or received during the course of these environmental services.

The information reported, as well as EBI's findings, conclusions, and recommendations are based upon sources deemed reasonably ascertainable, as defined in ASTM Standard E 1527-13; a visual site survey of areas readily observable, easily accessible or made accessible by the Subject Property contact and interviews with owners, agents, occupants, or other appropriate persons involved with the Subject

Property and a review of standard federal, state, and tribal environmental record sources. Municipal information was obtained through review of reasonably ascertainable standard government record sources and interviews with authorities having jurisdiction over the Subject Property. *Bedford Marketplace, LLC* agrees that EBI has no obligation to independently verify the accuracy or completeness of the information reviewed or received during the course of these environmental services.

EBI renders no opinion as to the presence of hazardous substances or petroleum products in, on or under un-surveyed and/or inaccessible portions of the Subject Property. Unsurveyed and inaccessible portions of the Subject Property are described below. In addition, EBI renders no opinion as to the presence of hazardous substances or petroleum products in, on or under the Subject Property where direct observation of the interior walls, floor, or ceiling of a structure was obstructed by objects or coverings on or over these surfaces.

EBI services and opinions are based on the scientific or technical tests or procedures specifically set forth in the scope of the Services described in this report. The ASTM Standard E 1527-13 does not encompass analytical testing to evaluate asbestos containing materials, radon, lead-based paint, drinking water quality, indoor air quality, stored chemicals, debris, fill materials, surface water, or subsurface samples (soil and groundwater) as part of a Phase I ESA. Because geologic and soil formations are inherently random, variable, and indeterminate in nature, the Services and opinions provided under this Agreement are not guaranteed to be a representation of actual conditions on the Subject Property, which are also subject to change with time as a result of natural or man-made processes, including water permeation. In performing the Services, EBI used that degree of care and skill ordinarily exercised by environmental consultants or engineers performing similar services in the same or similar locality at the same time and under similar circumstances. No other representation, expressed or implied, and no warranty or guarantee is included or intended. The report speaks only as of its date, in the absence of a specific written update of the report, signed and delivered by EBI. Additional information that becomes available after our survey and draft submission concerning the Subject Property should be provided to EBI so that our conclusions may be revised and modified if necessary, at additional cost.

Client and EBI agree that to the fullest extent permitted by law, EBI shall not be liable to Client for any special, indirect, consequential, punitive, exemplary, incidental or indirect damages or losses whatsoever, whether caused by EBI's negligence, errors, omissions, strict liability, breach of contract, breach of warranty or other cause or causes whatsoever.

The assessment was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession, and in accordance with generally accepted practices of other consultants currently practicing in the same locality under similar conditions.

1.4 SPECIAL TERMS AND CONDITIONS

The purpose of this report is to acquire environmental information, observe the general condition and maintenance status of the Subject Property, to suggest remediation and/or maintenance practices considered customary for the Subject Property to continue in its current operation, compared to properties of similar age and condition, and to identify recognized environmental conditions in connection with the Subject Property described in this report.

This Report was performed utilizing methods and procedures consistent with established commercial practices and in conformance with industry standards. The suggestions represent EBI Consulting's opinion based on written, graphic or verbal information, the property condition and data available to us at the time of the survey. Factual information regarding operations, conditions or data provided by the Client, occupants, owner or their representative has been assumed to be correct and complete.

Reliance on the Report and the information contained herein shall mean (i) the Report may be relied upon by a lender to be selected by Bedford Marketplace, LLC, in determining whether to make a loan evidenced by a note secured by the Property ("the Mortgage Loan"); (ii) the Report may be relied upon by any purchaser in determining whether to purchase the Mortgage Loan (but not the Subject Property) from that lender, or an interest in the Mortgage Loan or securities backed or secured by the Mortgage Loan, and any rating agency rating securities representing an interest in the Mortgage Loan or backed or secured by the Mortgage Loan; (iii) the Report may be referred to in and included, in whole or in part, with materials offering for sale the Mortgage Loan or an interest in the Mortgage Loan or securities backed or secured by the Mortgage Loan; (iv) the Report speaks only as of its date in the absence of a specific written update of the Report signed and delivered by EBI Consulting.

1.5 DATA GAPS

Any data gaps identified herein, as defined by ASTM Practice E1527-13 § 3.2.20, are not considered to have significantly affected the ability to identify recognized environmental conditions in connection with the Subject Property and do not alter the conclusions of this report.

2.0 SUBJECT PROPERTY DESCRIPTION

2.1 OWNERSHIP AND LOCATION

According to the Riverside County Assessor's Office, the Subject Property (two land lots) is currently owned by "Riverside County Transportation Commission."

The Subject Property is located at Intersections of Eagle Glen Parkway / Cajalco Road / Bedford Canyon Road / I-15 in the City of Corona, Riverside County, CA. The Subject Property includes two contiguous irregular-shaped parcels, identified by the Riverside County Assessor's Office as Map 279, Parcel 240, Lots 019-6, 033-8, cumulatively totaling approximately 18.13 acres. The Subject Property is located to the southwest of Interstate 15 and to the southeast of Eagle Glen Parkway/Cajalco Road. Figure 1 - Location Map depicts the location of the Subject Property on a street map of Corona, CA. Figure 2 - Locus Map depicts the location of the Subject Property on the Corona South, CA and Lake Matthews, CA United States Geological Survey (USGS) 7.5 Minute Topographic Quadrangles. Figure 3 - Site Plan depicts the configuration of the Subject Property and adjoining properties.

2.2 SUBJECT PROPERTY IMPROVEMENTS

The Subject Property is comprised of an irregular-shaped land lot that consists of vacant, undeveloped land. The Subject Property is bound to the northeast by Interstate 15, to the southeast by undeveloped land, to the southwest by graded land, and to the northeast by Eagle Glen Parkway/Cajalco Road. The Subject Property is not improved with any structures.

2.3 CURRENT USE OF THE SUBJECT PROPERTY

At the time of assessment, the Subject Property consisted of an undeveloped land lot**.**

Please refer to Section 5.2 for further discussion regarding hazardous substances and petroleum products at the Subject Property.

2.4 MUNICIPAL SERVICES & UTILITIES

The Subject Property area is serviced by the following municipal services and utilities:

MUNICIPAL SERVICES AND UTILITIES	
Utility	**Provider/Source**
Potable Water Supply	City of Corona Department of Water and Power
Sewage Disposal System	City of Corona
Electrical Service	City of Corona Department of Water and Power
Natural Gas Service	The Gas Company
Oil Service	Not provided
Heating/Cooling Systems	NA
Emergency Power	Not provided

2.5 ADJOINING PROPERTIES

Property use in the vicinity of the Subject Property is primarily characterized by retail/commercial development and vacant land.

ADJOINING PROPERTIES

ADJOINING PROPERTIES	
Northeast	The Subject Property is bound to the northeast by Interstate 15, beyond which is vacant land.
Southeast	The Subject Property is bound to the southeast by vacant land.
Southwest	The Subject Property is bound to the southwest by graded land and a large detention basin.
Northwest	The Subject Property is bound to the northwest, by Eagle Glen Parkway/Cajalco Road, beyond which are commercial buildings located at 3877 Bedford Canyon Road and 2225 Eagle Glen Parkway. In addition to the commercial buildings, a Mobil brand gas station/auto repair facility is also located beyond Eagle Glen Parkway/Cajalco Road at 2261 Eagle Glen Parkway.

No visual evidence of adverse environmental conditions was observed during the survey of the adjoining properties. However, an address associated with the northwest adjacent property (2261 Eagle Glen Parkway) is listed on the UST regulatory databases, among others. This listing is further discussed in Section 4.1.

3.0 USER PROVIDED INFORMATION

The following section summarizes information provided by Bedford Marketplace, LLC with regard to this Phase I Environmental Site Assessment. Additionally, a User Questionnaire was forwarded to the designated Client contact. The User Questionnaire has been completed and returned to our offices. The information requested in the User Questionnaire is intended to assist in gathering information that may be material to identifying recognized environmental conditions in connection with the Subject Property. The User Questionnaire and any additional documentation referenced below is presented in Appendix C.

3.1 TITLE RECORDS

Title record information associated with the Subject Property has not been provided to EBI by Bedford Marketplace, LLC. A detailed discussion regarding review of information obtained from other sources is presented in Section 4.3.5 of this report.

3.2 ENVIRONMENTAL LIENS AND ACTIVITY AND USE LIMITATIONS

Bedford Marketplace, LLC has provided no information regarding environmental liens or activity and use limitations in connection with the Subject Property. A discussion regarding environmental liens is presented in Section 4.3.7 of this report. A detailed discussion regarding activity and use limitations is presented in Sections 4.1.1 and 4.1.2 of this report.

3.3 SPECIALIZED KNOWLEDGE

Bedford Marketplace, LLC provided no specialized knowledge that is material to recognized environmental conditions in connection with the Subject Property. EBI was not provided with or made aware of previous environmental assessments or other documentation that is material to recognized environmental conditions in connection with the Subject Property, except as presented in Section 4.3.8 of this report.

3.4 COMMONLY KNOWN OR REASONABLY ASCERTAINABLE INFORMATION

Bedford Marketplace, LLC has provided no commonly known or reasonably ascertainable information within the local community about the Subject Property that is material to recognized environmental conditions in connection with the Subject Property.

3.5 VALUATION REDUCTION FOR ENVIRONMENTAL ISSUES

Bedford Marketplace, LLC has provided no information regarding valuation reduction for environmental issues in connection with the Subject Property.

3.6 OWNER, PROPERTY MANAGER, AND OCCUPANT INFORMATION

Bedford Marketplace, LLC provided contact information for the Subject Property owner, manager and/or occupants.

3.7 REASON FOR PERFORMING PHASE I ESA

Bedford Marketplace, LLC retained EBI to complete this Phase I Environmental Site Assessment in connection with a real estate transaction.

4.0 RECORDS REVIEW

4.1 STANDARD ENVIRONMENTAL RECORDS

A review of standard environmental databases maintained by Federal, state, and tribal offices was completed through Environmental Data Resources, Inc. (EDR) of Shelton, Connecticut. The databases were searched for properties with reported environmental conditions located within approximate minimum search distances as specified by ASTM Standard E 1527-13, by using geocoding information that identified the coordinates of the properties in the databases or by checking the street addresses of practically reviewable non-geocoded "orphan" properties within the same zip code. The database report is presented in Appendix E.

The database report did not identify any "orphan sites". Orphan sites are those sites that could not be accurately mapped or geocoded due to inadequate location information.

It should be noted that plotted locations of listed sites are not always accurate. With regard to listings that are determined or suspected to be inaccurate, based on information from other sources such as direct observation or consultation with individuals familiar with the property, EBI uses the best available data when evaluating the location of listed sites discussed below.

The following table provides a summary of the findings of the environmental database report. Specific properties identified within the database report are further discussed below.

SUMMARY OF FEDERAL, STATE, AND TRIBAL AGENCY DATABASE FINDINGS			
Regulatory Database	**Approximate Minimum Search Distance**	**Subject Property Listed**	**Off-site Listings Within Search Distance**
Federal NPL Sites	1.0 mile	No	0
Federal Delisted NPL Sites	0.5 mile	No	0
Federal CERCLIS Sites	0.5 mile	No	0
Federal CERCLIS NFRAP Sites	0.5 mile	No	0
Federal RCRA CORRACTS Sites	1.0 mile	No	0
Federal RCRA non-CORRACTS TSD Sites	0.5 mile	No	0
Federal RCRA Generators Sites	Property & Adjoining	No	0
Federal Engineering / Institutional Control Sites	0.5 mile	No	0
Federal ERNS Sites	Property	No	NA
CA Annual Workplan Sites (AWP)	1.0 mile	No	0
CA High-Priority Confirmed Release Sites (RESPONSE)	1.0 mile	No	0
CA Hazardous Waste Sites (ENVIROSTOR)	1.0 mile	No	**1**
CA Cal-Sites/HIST Cal-Sites	1.0 mile	No	0
CA Proposition 65 Notification Records (Notify 65)	1.0 mile	No	0
CA Toxic Pits Cleanup Act Sites (Toxic Pits)	1.0 mile	No	0
CA Bond Expenditure Plan	1.0 mile	No	0
CA Hazardous Waste and Substances Sites List (Cortese/HIST Cortese)	0.5 mile	No	0
CA Spill, Leaks, Investigations, and Cleanup (SLIC)	0.5 mile	No	0
CA Voluntary Cleanup Program (VCP) Properties	0.5 mile	No	0
CA Leaking Underground and Aboveground Storage Tanks (LUST/LAST)	0.5 mile	No	0
CA Storage Tank Databases (AST. UST, FID UST, HIST UST, SWEEPS UST)	Property & Adjoining	No	**1**

SUMMARY OF FEDERAL, STATE, AND TRIBAL AGENCY DATABASE FINDINGS			
Regulatory Database	**Approximate Minimum Search Distance**	**Subject Property Listed**	**Off-site Listings Within Search Distance**
CA Solid Waste Information System (SWIS and SWF/LF)	0.5 mile	No	0
CA Waste Management Unit Database / Solid Waste Assessment Test (WMUDS/SWAT)	0.5 mile	No	0
CA Hazardous Material Incident Report System (CHMIRS)	Property	No	NA
CA Hazardous Waste Information System (HAZNET)	Property	No	NA
CA Engineering Control / Institutional Control Registries	0.5 mile	No	0
CA Brownfields	0.5 mile	No	0
Tribal Environmental Databases	1.0 mile	No	0

4.1.1 Federal Agency Database Records

National Priority List (NPL)
The NPL database, also known as the Superfund List, is a subset of CERCLIS and identifies sites that are ranked as high priority for remedial action under the Federal Superfund Act. Neither the Subject Property nor any sites located within 1.0 mile of the Subject Property were identified on the NPL.

Delisted National Priority List (NPL)
The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425(e), sites may be deleted from the NPL where no further response is appropriate. Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on the Delisted NPL database.

Superfund Enterprise Management System (SEMS)
SEMS tracks federal hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of the USEPA's Superfund Program. The list was formerly known as CERCLIS and was renamed at the end of 2015. The list contains data regarding potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies, and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). SEMS also contains sites that are either proposed to or on the National Priority List (NPL), as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on the SEMS database.

SEMS – ARCHIVE
SEMS-ARCHIVE tracks sites that have been removed from the SEMS list. This list was formerly known as the CERCLIS- NFRAP list and was renamed SEMS-Archive at the end of 2015. SEMS-ARCHIVE sites may be sites where, following an initial investigation, no contamination was found, contamination was removed without the need for the site to be placed on the NPL, or the contamination was not considered sufficient to warrant Federal Superfund action or NPL consideration. Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on the SEMS-ARCHIVE database.

Resource Conservation and Recovery Act (RCRA) – Corrective Action Tracking System (CORRACTS)
RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS). The database includes selective information regarding sites that generate, transport, store, treat, and/or dispose of hazardous waste as defined by RCRA. The RCRA-CORRACTS database identifies TSD facilities that have conducted, or are currently conducting, corrective action(s) as regulated under RCRA. Neither the Subject Property nor any sites located within 1.0 mile of the Subject Property were identified on the RCRA CORRACTS database.

RCRA non-CORRACTS Treatment, Storage and/or Disposal (TSD) Facilities
RCRA non-CORRACTS Treatment, Storage and/or Disposal (TSD) facilities are required to register hazardous waste activity under the Resource Conservation and Recovery Act (RCRA). Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on the RCRA non-CORRACTS TSD database.

RCRA Hazardous Waste Generators
Hazardous waste generators tracked under the Resource Conservation and Recovery Act (RCRA) are classified as either Large Quantity Generators (LQGs), Small Quantity Generators (SQGs), or Conditionally Exempt Small Quantity Generators (CESQG). A RCRA-LQG is defined as a facility that generates over 1,000 kilograms (Kg) of hazardous waste, or over 1 Kg of acutely hazardous waste per month. A RCRA-SQG is defined as a facility that generates between 100 Kg and 1,000 Kg of hazardous waste per month. A RCRA-CESQG is defined as a facility that generates less than 100 Kg of hazardous waste, or less than 1 Kg of acutely hazardous waste per month. Neither the Subject Property nor any adjoining properties were identified on the RCRA Generator database.

Federal Engineering Control / Institutional Control Registries
The completion of site cleanup activities may include the implementation of engineering controls or institutional controls as part of the response action. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls. Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on Federal Engineering Control or Institutional Control Registries.

Emergency Response Notification System (ERNS)
ERNS is a national database used to collect information regarding reported releases of petroleum products and/or hazardous substances. The database contains information from spill reports submitted to Federal agencies, including the EPA, the U.S. Coast Guard, the National Response Center, and the U.S. Department of Transportation. A review of this database was conducted in order to determine whether any spills or incidents involving releases of hazardous substances or petroleum products have occurred at the Subject Property. The Subject Property was not identified on the ERNS database.

4.1.2 State and Tribal Agency Database Records

Annual Workplan Sites (AWP)
The California Department of Toxic Substance Control (DTSC) Annual Workplan Sites (AWP) identifies known hazardous substance release sites targeted for cleanup. The data source is the

California Environmental Protection Agency. Neither the Subject Property nor any sites located within 1.0 mile of the Subject Property were identified on the AWP database.

California High-Priority Confirmed Release Sites (RESPONSE)
The California High-Priority Confirmed Release Sites (RESPONSE) database contains confirmed release sites where the California Department of Toxic Substance Control (DTSC) is involved in the remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk. Neither the Subject Property nor any sites located within 1.0 mile of the Subject Property were identified on the RESPONSE database. on the RESPONSE database. Information regarding the listed sites is presented in the following table:

California Hazardous Waste Sites (ENVIROSTOR)
The California Hazardous Waste Sites (ENVIROSTOR) database contains potential or confirmed hazardous substance release sites, or sites for which there may be reasons to investigate further, identified by the California DTSC. The database includes the following site types: Federal NPL; State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. The Subject Property was not identified on the ENVIROSTOR database. However, one site located within 1.0 mile of the Subject Property was identified on the ENVIROSTOR database. The listing is located over 0.25 mile from the Subject Property and based on separating distance, it is considered unlikely to represent an environmental concern to the Subject Property.

Cal-Sites/HIST Cal-Sites
Formerly known as ASPIS, this database contains both known and potential hazardous substance sites. The source is the California Department of Toxic Substance Control (DTSC). This database is no longer updated by the state agency. It has been replaced by ENVIROSTOR. Neither the Subject Property nor any sites located within 1.0 mile of the Subject Property were identified on the Cal-Sites/HIST Cal-Sites databases.

Proposition 65 Notification Records (Notify 65)
Proposition 65 Notification Records contain facility notifications regarding any release that could potentially impact drinking water and thereby expose the public to a potential health risk. The Notify 65 database includes listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency. Neither the Subject Property nor any sites located within 1.0 mile of the Subject Property were identified on the Notify 65 database.

Toxic Pits Cleanup Act Sites (Toxic Pits)
The Toxic Pits Cleanup Act Sites (Toxic Pits) database contains sites identified by the California Water Resources Control Board that are suspected to contain hazardous substances where cleanup has not yet been completed. Neither the Subject Property nor any sites located within 1.0 mile of the Subject Property were identified on the Toxic Pits database.

California Bond Expenditure Plan
The California Bond Expenditure Plan was developed by the California Department of Health Services as a site-specific expenditure plan for the appropriation of Hazardous Substance Cleanup Bond Act funds. Neither the Subject Property nor any sites located within 1.0 mile of the Subject Property were identified on the California Bond Expenditure Plan database.

Hazardous Waste and Substances Sites List (Cortese/HIST Cortese)
The Hazardous Waste and Substance Site List (also known as the Cortese/HIST Cortese databases) is a planning document used by the State, local agencies, and developers to comply with California

Environmental Quality Act requirements in providing information regarding the location of hazardous materials releases. Government Code Section 65962.5 requires the California Environmental Protection Agency to develop at least annually an updated Cortese List. The California DTSC is responsible for preparing a portion of the information that comprises the Cortese List, and other state and local government agencies are required to provide additional hazardous material release information for the Cortese/HIST Cortese databases. Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on the Cortese/HIST Cortese databases.

Spill, Leaks, Investigations, and Cleanup (SLIC)
The Spills, Leaks, Investigations, and Cleanups (SLIC) database, maintained by the California Water Resources Control Board, includes unauthorized discharges from spills and leaks, other than from underground storage tanks or other regulated sites. Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on the SLIC database.

Voluntary Cleanup Program (VCP) Properties
The Voluntary Cleanup Program (VCP) Properties database identifies low threat level properties with either confirmed or unconfirmed releases, for which the project proponents have requested that Department of Toxic Substances Control (DTSC) oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs. Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on the VCP database.

Leaking Underground and Aboveground Storage Tank Sites (LUST/LAST)
The Regional Water Quality Control Board (RWQCB) maintains a database of reported Leaking Storage Tank (LUST/LAST) sites. Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on the LUST/LAST databases.

California UST Databases (AST, UST, FID UST, HIST UST, SWEEPS UST)
The California Environmental Protection Agency, the California Water Resources Control Board and other entities previously maintained or currently maintain various lists recording permitted aboveground and underground storage tank (AST/UST) sites in California. The Subject Property was not identified on the AST/UST databases. However, one adjoining property was identified on the AST/UST databases. Information regarding the listed site is presented in the following table:

CA UST DATABASES				
Location	**Distance / Direction / Gradient**	**Capacity / Contents**	**Year Installed**	**Status**
Eagle Glen Mobil 2261 Eagle Glen Parkway Corona, CA	Adjacent / Northwest / Crossgradient	Three tanks / not reported	Not reported	Not reported

* Presumed hydrogeologic gradient based upon regional topography

Based upon the absence of reported releases, the separating distance, and presumed hydrogeologic gradient relative to the Subject Property, it is considered unlikely that conditions associated with the identified site represent an environmental concern to the Subject Property.

Solid Waste Information System (SWIS and SWF/LF)
The Solid Waste Information System (SWIS and SWF/LF) facility database contains information on solid waste facilities, operations, and disposal sites throughout the State of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites. For each facility, the database contains information about location, owner, operator, facility type, regulatory and operational status, authorized

waste types, local enforcement agency and inspection and enforcement records. Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on the SWIS and SWF/LF databases.

Waste Management Unit Database / Solid Waste Assessment Test (WMUDS/SWAT)
The Waste Management Unit Database (WMUDS) is used by the California Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs) for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information. Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on the WMUDS/SWAT database.

California Hazardous Material Incident Report System (CHMIRS)
The California Hazardous Material Incident Report System (CHMIRS) contains information regarding reported hazardous material incidents (i.e. accidental releases or spills). The data source is the California Office of Emergency Services. The Subject Property was not identified on the CHMIRS database.

Hazardous Waste Information System (HAZNET)
The California Environmental Protection Agency maintains a list of facilities that issue hazardous waste manifests. The source of the manifest records is the California Department of Toxic Substance Control (DTSC). Inclusion on the HAZNET database does not necessarily indicate the existence of an environmental concern, such as a release or spill incident. The Subject Property was not identified on the HAZNET database.

State and Tribal Engineering Control / Institutional Control Registries
The completion of site cleanup activities may include the implementation of engineering controls or institutional controls as part of the response action. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls. Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on state or tribal Engineering Control or Institutional Control Registries.

State and Tribal Brownfield Sites
Neither the Subject Property nor any sites located within 0.5 mile of the Subject Property were identified on state or tribal Brownfield Sites databases.

Tribal Environmental Databases
The United States Bureau of Indian Affairs (BIA) is responsible for the administration and management of 55.7 million acres of land held in trust by the United States for American Indians, Indian tribes, and Alaska Natives. There are 562 federally recognized tribal governments in the United States. The environmental database report identifies tribal administered lands of the United States that have any area equal to or greater than 640 acres. No tribal administered lands were identified within 1.0 mile of the Subject Property.

4.1.3 Local Regulatory Agency Records

Local municipal offices consulted during the completion of this assessment included the following:

City of Corona Building Department
EBI searched for available files regarding the Subject Property on the City of Corona Building Department's online database regarding past uses of the Subject Property. However, as per the database, the City of Corona does not have any building permits associated with the Subject Property APNs.

County of Riverside Department of Environmental Health
EBI has submitted a written request to the County of Riverside Department of Environmental Health for information regarding the generation, transportation, storage, treatment, disposal, and/or spills or releases of hazardous substances or petroleum products at the Subject Property, in accordance with the Freedom of Information Act (FOIA). As of the date of this report, EBI has not received a response to this inquiry. Upon receipt of the agency response, if the provided information has a material effect on the findings of this report, EBI will forward this information as an addendum to this report. If no response is received, or no material information is identified, our report will not be modified.

State Water Resources Control Board
EBI searched the SWRCB's Geotracker database through their website. This website lists regulated facilities in California including leaking USTs, other contaminated properties reported on the Spills, Leaks, Investigations and Cleanup List (SLIC), wells, land disposal sites, military sites and permitted UST sites. The Subject Property was not identified on the Geotracker database.

Department of Toxic Substances Control (DTSC)
EBI searched the DTSC's databases of Hazardous Waste and Substances Site List – Site Cleanup and EnviroStor List that includes NPL sites, State Response Sites, Voluntary Cleanup Sites, School Cleanup Sites and Corrective Action Sites at the website http://www.envirostor.dtsc.ca.gov/public/default.asp. The Subject Property was not identified on the DTSC's database.

4.1.4 Vapor Migration

EBI conducted a vapor migration screening survey of the Subject Property. This vapor migration screening was conducted in accordance with ASTM E1527-13 and is not intended to satisfy the requirements of ASTM E2600-15. The scope of this screening was limited to visual observations and review of the environmental database report and did not include the collection and laboratory analysis of air samples to confirm or refute the presence of airborne contaminants by vapor intrusion.

EBI's site observations and review of the environmental database report (cited in Section 4.1) did not identify any conditions on the Subject Property or on adjoining properties that would indicate a REC relative to vapor migration at the Subject Property.

4.2 PHYSICAL SETTING

4.2.1 Topography

The Subject Property is located at an elevation of approximately 905 feet above mean sea level (msl). The topography of the Subject Property is relatively flat and slopes gently to the northeast. The Subject Property is located in a relatively flat area, and the general slope of the surrounding region is to the

northeast (see Figure 2 - Locus Map, which depicts the location of the Subject Property on the Corona South, CA and Lake Matthews, CA USGS 7.5 Minute Topographic Quadrangles).

4.2.2 Geology and Soils

No bedrock outcroppings were observed at the Subject Property. Information concerning the geology of the Subject Property was obtained from the USGS Ground Water Atlas of the United States, California region (1995). The Subject Property is located within the Pacific Border physiographic province, which is characterized by steep rolling hills and mountains and consists of severely folded, faulted, commonly metamorphosed marine and continental sediments.

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey (WSS) website (http://websoilsurvey.nrcs.usda.gov), there is no soil data available for the Subject Property.

Near-surface geology in heavily developed areas such as the Subject Property and vicinity is considered "urban land" and is characterized by a non-homogeneous distribution of soil and fill types. Excavation and backfilling for building foundations, utility conduits, subway systems and other construction results in a varied subsurface profile. In this setting, estimation of local subsurface parameters such as permeability, moisture content, and organic fraction is not feasible without site-specific testing data.

4.2.3 Hydrogeology and Hydrology

No natural surface water bodies were identified on or adjacent to the Subject Property. There are no downgradient surface water bodies within one mile of the Subject Property.

Local groundwater gradient is expected to follow surface topography; therefore, groundwater flow near the Subject Property is expected to flow to the northeast. Groundwater depths and flow gradients are best evaluated by a subsurface investigation involving the installation of at least three groundwater monitoring wells and precise measurements of hydrostatic pressure. Monitoring wells were not observed on the Subject Property.

4.3 HISTORICAL USE OF THE SUBJECT PROPERTY AND ADJOINING PROPERTIES

EBI attempted to determine the history of the Subject Property dating back to 1940 or first developed use. The following table summarizes the historical use of the Subject Property and surrounding area.

HISTORICAL USE SUMMARY			
Period	**Historical Uses**		**Source(s)**
	Subject Property	**Surrounding Area**	
At least 1931-1953	Vacant land with a small structure during at least 1931-1938.	Primarily Undeveloped land.	Aerial Photographs Topographic Maps City Directories
1961-1995	Agricultural use; no structures present.	Agricultural use; no structures present.	Aerial Photographs Topographic Maps City Directories ords
2006-2009	Agricultural use; no structures present.	Agricultural use; no structures present, with the exception of the northwest adjacent property which was improved with commercial development	Aerial Photographs Topographic Maps City Directories

HISTORICAL USE SUMMARY			
Period	**Historical Uses**		**Source(s)**
	Subject Property	**Surrounding Area**	
2012 to present	Vacant land.	Vacant land; no structures present, with the exception of the northwest adjacent property	Aerial Photographs Topographic Maps City Directories

No environmentally significant conditions were identified on the Subject Property or surrounding properties during the historical review.

4.3.1 Aerial Photographs

Historical aerial photographs may be used to evaluate changes in land use and to identify visible areas of potential environmental concern. A search for historical aerial photographs depicting the Subject Property and vicinity was conducted by Environmental Data Resources, Inc. (EDR). It should be noted that the scale of the available aerial photographs precludes the distinct identification of structures and/or land uses on or in the vicinity of the Subject Property. Aerial photographs depicting the Subject Property were reviewed and are summarized in the following table. Copies of the aerial photographs are presented in Appendix F.

AERIAL PHOTOGRAPH SUMMARY		
Year	**Issues Noted**	**Observations**
1931, 1938	No	**Subject Property:** The Subject Property appears to consist primarily of vacant land. A small structure resembling a possible dwelling is located on the northwest corner of the Subject Property.
		Surrounding Area: Surrounding properties to the northeast, southeast, and northwest appear to consist of vacant land. The adjacent property to the southwest appears to consist primarily of vacant land with the exception of a small structure resembling a possible dwelling.
1948	No	**Subject Property:** Conditions on the Subject Property appear to be similar to those depicted on the 1938 photograph, though the small structure previously noted on the northwest corner of the Subject Property is no longer apparent.
		Surrounding Area: Conditions on the surrounding properties appear to be similar to those depicted on the 1938 photograph.
1953	No	**Subject Property:** The Subject Property appears to consist of vacant land.
		Surrounding Area: The surrounding properties appear to consist of vacant land.
1961, 1967, 1975, 1985, 1990, 1995	No	**Subject Property:** The Subject Property appears to consist of agricultural land.
		Surrounding Area: The surrounding properties appear to consist of agricultural land.
2006, 2009	No	**Subject Property:** The Subject Property appears to consist of agricultural land.
		Surrounding Area: The surrounding properties appear to consist of agricultural land, with the exception of the northwest adjacent property which is improved with structures resembling the existing commercial buildings.
2012, 2016	No	**Subject Property:** The Subject Property appears to consist of vacant land.
		Surrounding Properties: With the exception of the northwest adjacent property, the surrounding properties appear to consist of vacant land.

4.3.2 Fire Insurance Maps

A search for historical fire insurance maps depicting the Subject Property and vicinity was conducted by EDR Sanborn Maps, Inc. The EDR Report indicated that coverage for the vicinity of the Subject Property was not available. A copy of the search documentation letter is presented in Appendix F.

4.3.3 Topographic Maps

Historical topographic maps provide information related to physical land configuration such as elevation, ground slope, surface water and other features. While most buildings in densely developed urban centers are not depicted, topographic maps typically show structures equal to or larger than the size of a single-family residence in rural areas. Other notable features such as woods, pipelines, municipal boundaries, and areas of filled land are often marked on topographic maps.

A search for historical topographic maps depicting the Subject Property and vicinity was conducted by Environmental Data Resources, Inc. (EDR). Historical topographic maps depicting the Subject Property were reviewed and are summarized in the following table. Copies of the topographic maps are presented in Appendix F.

TOPOGRAPHIC MAP SUMMARY		
Year	**Issues Noted**	**Observations**
1902, 1947, 1953, 1967, 1973, 1982, 1988, 1997	No	**Subject Property:** No structures or other notable features are depicted on the Subject Property.
		Surrounding Properties: No structures or other notable features are depicted on the surrounding properties.
2012	No	**Subject Property:** The map depicts topography and infrastructure; distinct buildings are not shown.
		Surrounding Properties: The map depicts topography and infrastructure; distinct buildings are not shown.

4.3.4 Street Directories

Street directories are commercial publications containing names and addresses, and in many cases, occupations of the occupants of a particular community. The directories may also contain information pertaining to business processes conducted within a community. A search for historical street directories was conducted by Environmental Data Resources, Inc. (EDR).

According to a review of additional historical sources, the Subject Property has never been developed with structures and has not yet been assigned street addresses; hence, the Subject Property was not identified in the search of historical street directories. Copies of the street directories are presented in Appendix F.

4.3.5 Recorded Land Title Records

Land title records provide information on previous ownership of a property. Typically, deeds signifying transfer of a land parcel are recorded in county files and can be researched to determine the identity of past owners. A "chain of title" is a continuous record of ownership for a specific parcel. A 50-year chain of title search was not included in the scope of work for this assessment.

4.3.6 Property Tax Records

The property card for the Subject Property was not obtained at the Riverside County Assessor's Office. However, according to the Assessor's Office, the Subject Property is currently owned by "Riverside County Transportation Commission. A listing of the former Subject Property owners was not available for review.

4.3.7 Environmental Liens and Activity and Use Limitations

A search for Environmental Liens and Activity and Use Limitations was not included in the scope of this assessment.

4.3.8 Previous Environmental Reports

EBI was not provided with or made aware of previous environmental assessments or other documentation regarding environmental investigations performed for the Subject Property. EBI did not identify previous environmental reports for the Subject Property at local agencies or other sources contacted during this assessment.

4.3.9 Other Historical Records and Interviews

A brief interview was conducted with Mr. Glen Powles (Guardian Capital) to obtain information regarding the history of the Subject Property. According to Mr. Powles, the Subject Property consists of a large vacant land lot. Several attempts were made to conduct further interviews to obtain additional information regarding the Subject Property, however, as of the date of this report, EBI has not received a response to these inquiries.

5.0 SUBJECT PROPERTY RECONNAISSANCE

The Subject Property reconnaissance was conducted by Mr. Christopher Evans, EBI Project Scientist, on June 7, 2019. Mr. Evans was unaccompanied during the Subject Property reconnaissance.

5.1 METHODOLOGY AND LIMITING CONDITIONS

The Subject Property reconnaissance consisted of visual and/or physical observations of the Subject Property and improvements, adjoining properties as viewed from the Subject Property boundaries, and the surrounding area based on visual observations made from adjacent public thoroughfares. Unimproved portions of the property were observed in a general grid pattern in accessible areas.

At the time of the survey, the weather was cloudy and approximately 70° Fahrenheit. During the survey, the open land lot (Subject Property) was observed. There were no significant portions of the Subject Property that were inaccessible or excluded from this survey.

5.2 HAZARDOUS SUBSTANCES AND PETROLEUM PRODUCTS

5.2.1 Hazardous Substances and Petroleum Products (Identified Uses)

EBI did not observe evidence of hazardous substance or petroleum products containers at the Subject Property that were not in connection with identified uses.

5.2.2 Hazardous Substances and Petroleum Products (Unidentified Uses)

EBI did not observe evidence of hazardous substance or petroleum products containers at the Subject Property that were not in connection with identified uses.

5.2.3 Unidentified Substances Containers

EBI did not observe evidence of unidentified substances containers at the Subject Property.

5.3 WASTE GENERATION, STORAGE, AND DISPOSAL

No evidence of improper solid waste management or the improper disposal of hazardous substances or petroleum products was observed at the time of reconnaissance.

5.4 UNDERGROUND STORAGE TANKS (USTS) & ABOVEGROUND STORAGE TANKS (ASTS)

5.4.1 Existing Storage Tanks

Based upon site reconnaissance, interviews, and a review of state and local records, EBI identified no evidence of existing USTs or ASTs located at the Subject Property.

5.4.2 Former Storage Tanks

Based upon site reconnaissance, interviews, and a review of state and local records, EBI identified no evidence of former USTs or ASTs located at the Subject Property.

5.5 OIL-CONTAINING EQUIPMENT AND POLYCHLORINATED BIPHENYLS (PCBS)

Polychlorinated biphenyls (PCBs) are a chemical component of many dielectric fluids, heat transfer fluids, hydraulic fluids, lubricating oils, paints, or coatings manufactured prior to July 2, 1979. Equipment that may potentially contain PCBs includes electrical equipment such as transformers or capacitors or hydraulically operated equipment, such as elevators, compaction equipment, or manufacturing equipment. The manufacture and distribution in commerce of PCBs was banned for use in 1979 by the United States Congress, which enacted the Toxic Substance and Control Act (TSCA). In accordance with *US Code of Federal Regulations Title 40 - Protection of Environment, Chapter I - Environmental Protection Agency, Subchapter R - Toxic Substance Control Act (TSCA), Part 761 - Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions*, the owner of a transformer or other PCB-containing equipment is responsible for equipment maintenance and remediation in the event of a leak or release.

Based upon the absence of transformers, hydraulic equipment or other oil-containing equipment, no potential PCB-containing equipment was identified at the Subject Property.

5.6 ADDITIONAL SITE CONDITIONS

Based upon site reconnaissance, interviews, and a review of applicable records, EBI identified no additional evidence of additional site conditions or concerns.

6.0 INTERVIEWS

The site contact or Key Site Manager was contacted to be interviewed to obtain information regarding recognized environmental conditions in connection with the property. Additionally, an ESA AAI User Questionnaire was forwarded to the designated Subject Property contact. The questionnaire has been completed and returned to our offices. The information requested in the Pre-Survey Questionnaire is intended to assist in gathering information that may be material to identifying recognized environmental conditions in connection with the Subject Property. The questionnaire and any accompanying documentation is presented in Appendix C.

KEY SITE MANAGER INTERVIEW			
Contact / Affiliation	**Date of Communication**	**Years Associated with Subject Property**	**Telephone No.**
Glen Powles Guardian Capital	06/03/2019	Not reported	(760) 780-7167

Pertinent information from the interviews is presented in applicable sections of this report.

7.0 CONSIDERATIONS OUTSIDE THE SCOPE OF ASTM PRACTICE E 1527-13

The following sections address environmental issues or considerations at the Subject Property that parties may wish to assess in connection with commercial real estate that are outside the scope of ASTM Practice E 1527-13 (non-scope considerations).

7.1 ASBESTOS-CONTAINING MATERIAL (ACM)

Asbestos is a term used to describe a group of six naturally occurring crystalline fiber minerals. Asbestos has excellent thermal stability, a high degree of tensile strength, and has been used extensively in the textile, insulation, and building industries, particularly as a component in fireproofing, decorative coatings, insulation materials, and as reinforcement for plaster binders in building products. Asbestos-containing building materials are generally classified as friable or non-friable. Friable materials are those that can be crumbled, pulverized, or reduced to powder by hand pressure, or by normal use or maintenance can be expected to emit asbestos fibers into the air. Non-friable ACM is a potential concern if it is damaged by maintenance work, demolition, or other activities, at which time it may be considered friable.

Based upon the lack of building improvements on the Subject Property and in accordance with the scope of work for this assessment, EBI did not conduct a survey for the presence of ACM.

7.2 RADON

Radon is a naturally-occurring, colorless and odorless radioactive gas that is generated primarily in granitic rocks. The United States Surgeon General has published information that radon is a cause of lung cancer. Radon usually enters a building through openings in the foundation, and therefore is a potential health concern to residents of the lowest level of a building with inadequate ventilation.

The EPA Map of Radon Zones indicates that Riverside County is located within a Zone 2 radon area. Zone 2 is defined as an area that has a moderate potential for radon gas, with a predicted average indoor radon screening level between 2.0 picoCuries per liter (pCi/L) and 4.0 pCi/L. The EPA recommended Action Level for radon is 4.0 pCi/L.

Based upon the lack of building improvements on the Subject Property and in accordance with the scope of work for this assessment, EBI did not conduct a limited short-term radon screening at the Subject Property.

7.3 LEAD-BASED PAINT (LBP)

Use of lead in household paint was banned by the U.S. Environmental Protection Agency (EPA) effective January 1, 1978. The EPA and the U.S. Department of Housing and Urban Development (HUD) consider lead-based paint as containing a lead concentration equal to or greater than 1.0 milligram per square centimeter (mg/cm^2) or 0.5% lead by weight, as defined by Title X of the 1992 Housing and Community Development Act.

Based on the lack of building improvements on the Subject Property and in accordance with the scope of work of this assessment, a lead-based paint (LBP) survey was not conducted at the Subject Property.

7.4 LEAD IN DRINKING WATER

Lead has historically been used in pipes, solder, and brass fixtures used in water distribution systems and building plumbing systems. In 1986, EPA banned the use of lead at concentrations exceeding 0.2% lead

in solder and 8% lead in other plumbing materials. Lead in drinking water results primarily from corrosion of lead containing materials in service lines or from corrosion of lead containing materials in building plumbing systems such as lead solder, brass, bronze, and other lead containing alloys. The EPA Action Level for lead in public drinking water supplies is 0.015 parts per million (ppm) or 0.015 milligrams per liter (mg /L).

At the time of the Subject Property reconnaissance, the Subject Property was not developed with any building improvements. Potable water service will be provided to the Subject Property by the City of Corona Department of Water and Power. Based upon review of the Water Quality Report, the municipal water supply meets all current criteria established by the Safe Drinking Water Act (SDWA) and local municipal drinking water standards, including those for lead. Based upon the existing municipal water service and in accordance with the scope of work for this assessment, EBI did not conduct lead-in-drinking water sampling at the Subject Property.

8.0 FINDINGS AND OPINIONS

EBI has performed this Phase I Environmental Site Assessment of the Subject Property in conformance with the scope and limitations of ASTM Standard E 1527-13. Any exceptions to, or deletions from, this practice are described in Section 1.0 of this report.

This assessment has identified no evidence of *recognized environmental conditions (RECs), historical recognized environmental conditions (HRECs), controlled recognized environmental conditions (CRECs), de minimis conditions*, or *considerations outside the scope of ASTM Practice E 1527-13,* in connection with the Subject Property.

9.0 RECOMMENDATIONS

Based upon the findings of this investigation, no further action is recommended.

10.0 REFERENCES

PHASE I ENVIRONMENTAL SITE ASSESSMENT REFERENCES

ASTM Designation E 1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.

Property Records: City of Corona Building Department.

Environmental Data Resources, Inc., EDR Historical Topographic Map report; Inquiry Number 5678071.4, dated June 10 2019.

Environmental Data Resources, Inc., The EDR Radius Report with GeoCheck®; Inquiry Number 05678071.2r, dated June 10 2019.

Environmental Data Resources, Inc., EDR Aerial Decade Package report; Inquiry Number 5672537.8, dated June 4 2019.

Environmental Data Resources, Inc., EDR Sanborn Map report; Inquiry Number 5678071.3, dated June 10 2019.

Environmental Data Resources, Inc., The EDR-City Directory Abstract; Inquiry Number 5678071.5, dated June 10 2019.

Records searched at the South Coast Air Quality Management District (SCAQMD) online database; http://www3.aqmd.gov/webappl/fim/prog/search.aspx.

Records searched at the California State Water Resource Board, GeoTracker database information system; http://geotracker.waterboards.ca.gov/.

APPENDIX A

PHOTOGRAPHS



1.	View of the Subject Property, looking northeast.



2.	View of the Subject Property, looking northwest.



3.	View of the Subject Property, looking northwest.



4.	View of the Subject Property, looking east.



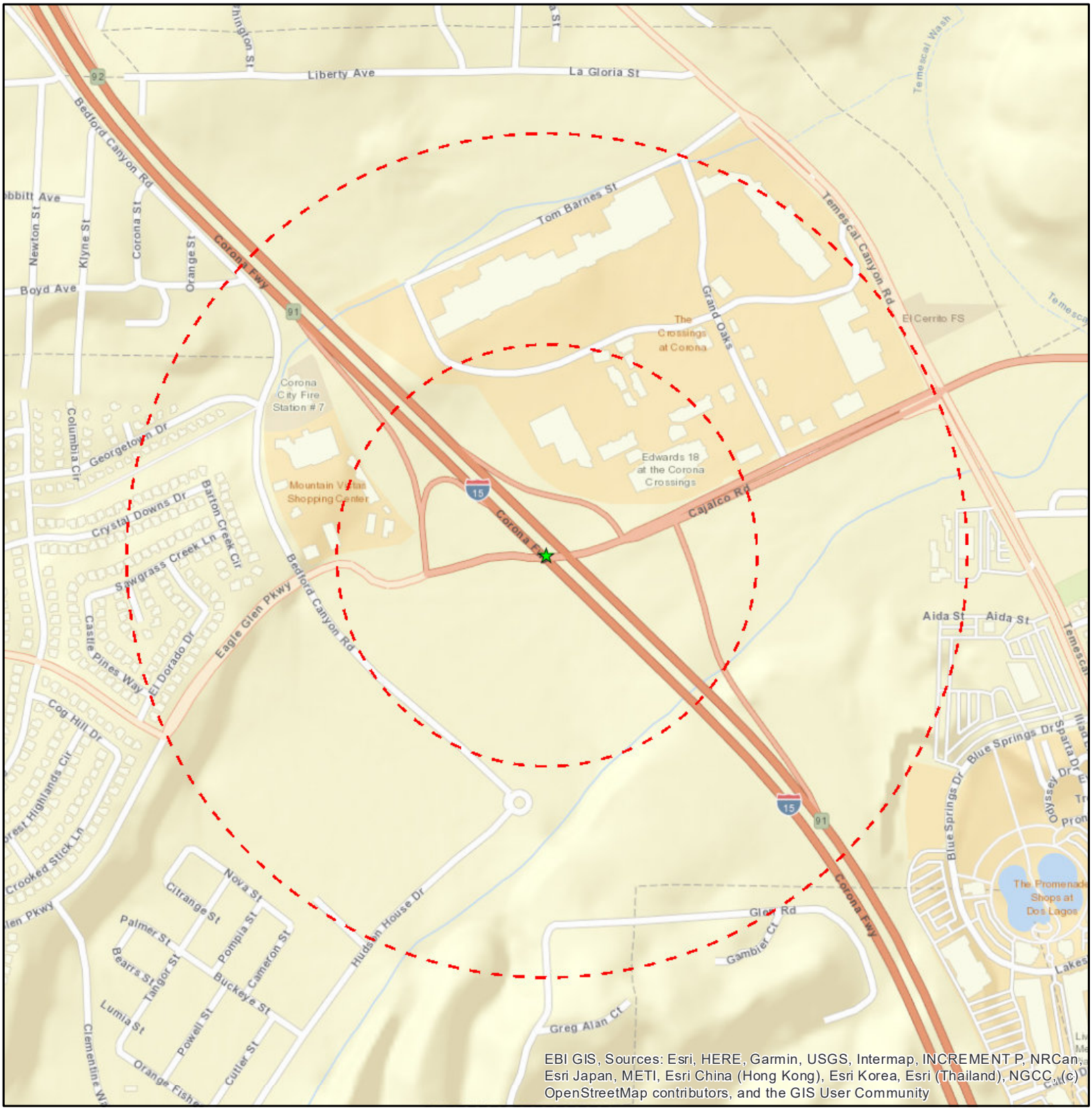
5.	View of a portion of the northwest adjacent property.



6.	View of a portion of the northwest adjacent property.

APPENDIX B

FIGURES



Legend

- Project Site
- Site Radius at ¼ and ½ mile

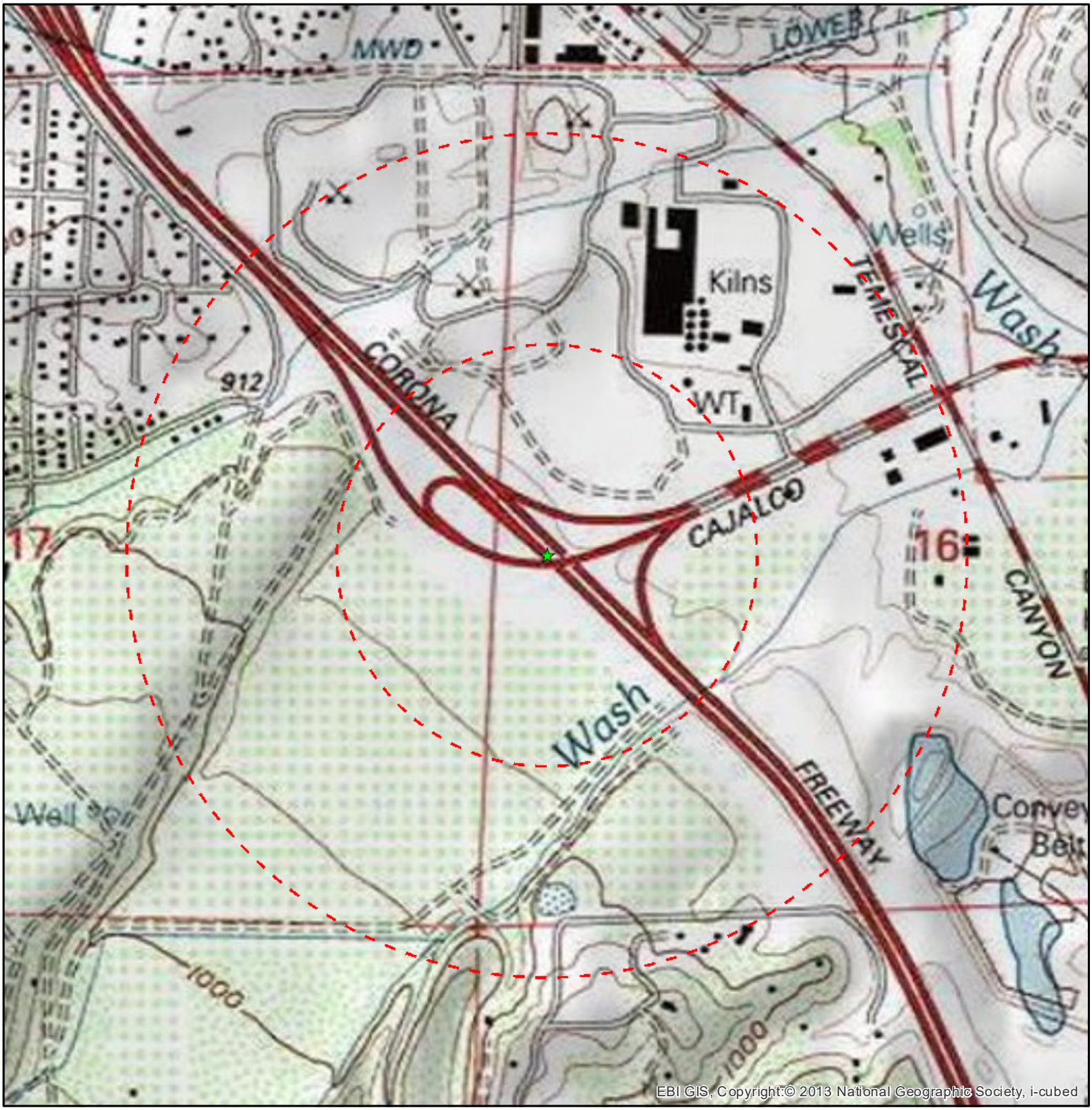
Date: 6/11/2019

Figure 1: Site Location Map

BEDFORD MARKETPLACE - RCTCT PORTION
INTERSECTIONS OF EAGLE GLEN PARKWAY / CAJALCO ROAD / BEDFORD CANYON RO
CORONA, CA 92883

PN: 1119003601

EBI Consulting
environmental | engineering | due diligence



Legend

★ Project Site

Site Radius at ¼ and ½ mile

USGS 24K Quad: Corona South, CA 1986

Date: 6/11/2019

Figure 2 - Topographic Map

BEDFORD MARKETPLACE - RCTCT PORTION

INTERSECTIONS OF EAGLE GLEN PARKWAY / CAJALCO ROAD / BEDFORD CANYON RO

CORONA, CA 92883

PN: 1119003601

EBI Consulting
environmental | engineering | due diligence



FIGURE 3 – SITE PLAN

N

Not to scale

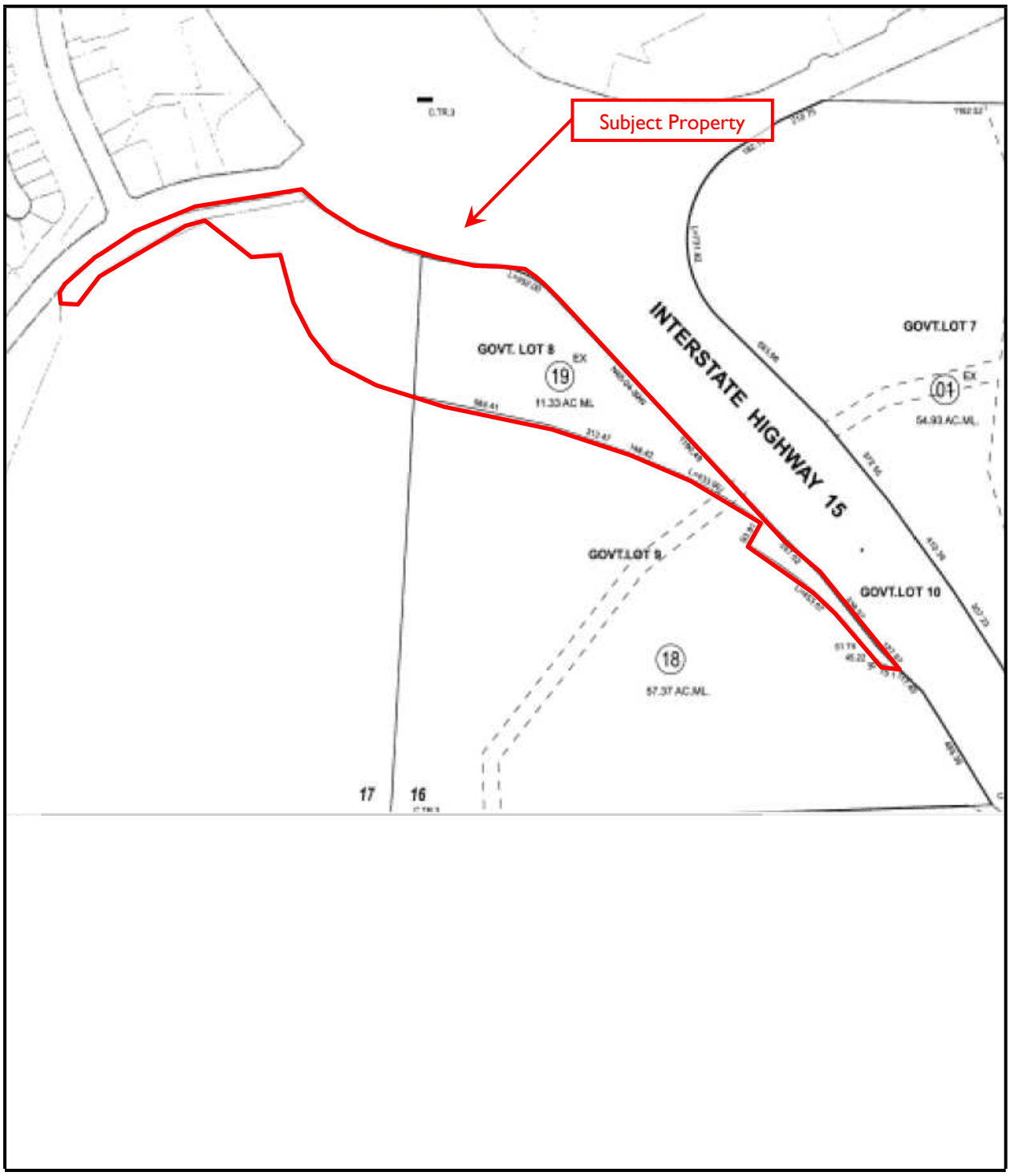


FIGURE 4 – TAX MAP

N

Not to scale

APPENDIX C

PRE-SURVEY QUESTIONNAIRE AND OTHER RELEVANT DOCUMENTATION

ESA AAI USER QUESTIONNAIRE (ASTM E 1527-13)

Subject Property Name: Bedford Marketplace EBI Project #: TBD

Address: Intersections of Eagle Glen Pkwy/Cajalco Road/Bedford Canyon Road and I-15

1. Are you aware of any environmental cleanup liens against the Subject Property that are filed or recorded under federal, tribal, state or local law?

   Yes / No / Unknown / Not Applicable

   If yes, please attach a copy.

2. Are you aware of any Activity and Use Limitations (AULs), such as engineering controls, land use restrictions or institutional controls that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law?

   Yes / No / Unknown / Not Applicable

   If yes, please attach a copy.

3. As the user of this ESA do you have any specialized knowledge or experience related to the Subject Property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the Subject Property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business? Or, do you have documentation (i.e., Phase I ESAs, Phase II subsurface investigations, Tank Removal reports, remedial reports, asbestos sampling and/or abatement reports, lead-based paint sampling and/or abatement reports, etc.) for the Subject Property that may be relevant to the Phase I ESA?

   Yes / No / Unknown / Not Applicable

   Comments: Affiliated with ownership of The Eagle Glen Shopping Center immediately across Eagle Glen Pkwy.

4. Does the purchase price being paid for this Subject Property reasonably reflect the fair market value of the Subject Property?

   Yes / No / Unknown / Not Applicable

   If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the Subject Property?

   Yes / No

   Comments: _____

ESA AAI USER QUESTIONNAIRE (ASTM E 1527-13)

5. Are you aware of commonly known or reasonably ascertainable information about the Subject Property that would help the environmental professional to identify conditions indicative of release or threatened releases? For example, as user,
   a. Do you know the past uses of the Subject Property?
   b. Do you know the specific chemicals that are present or once were present at the Subject Property?
   c. Do you know of spills or other chemical releases that have taken place at the Subject Property?
   d. Do you know of any environmental cleanups that have taken place at the Subject Property?

   Comments: None

   Please attach copies of previous environmental reports prepared for the Subject Property. None

6. As the user of this ESA, based on your knowledge and experience related to the Subject Property are there any obvious indicators that point to the presence or likely presence of contamination at the Subject Property?

   Yes / No / Unknown / Not Applicable

   Comments: _____

Please be sure to attach copies of documentation, as available.

Completed by:

Name _____ Title _____

Company Name _____ Date _____

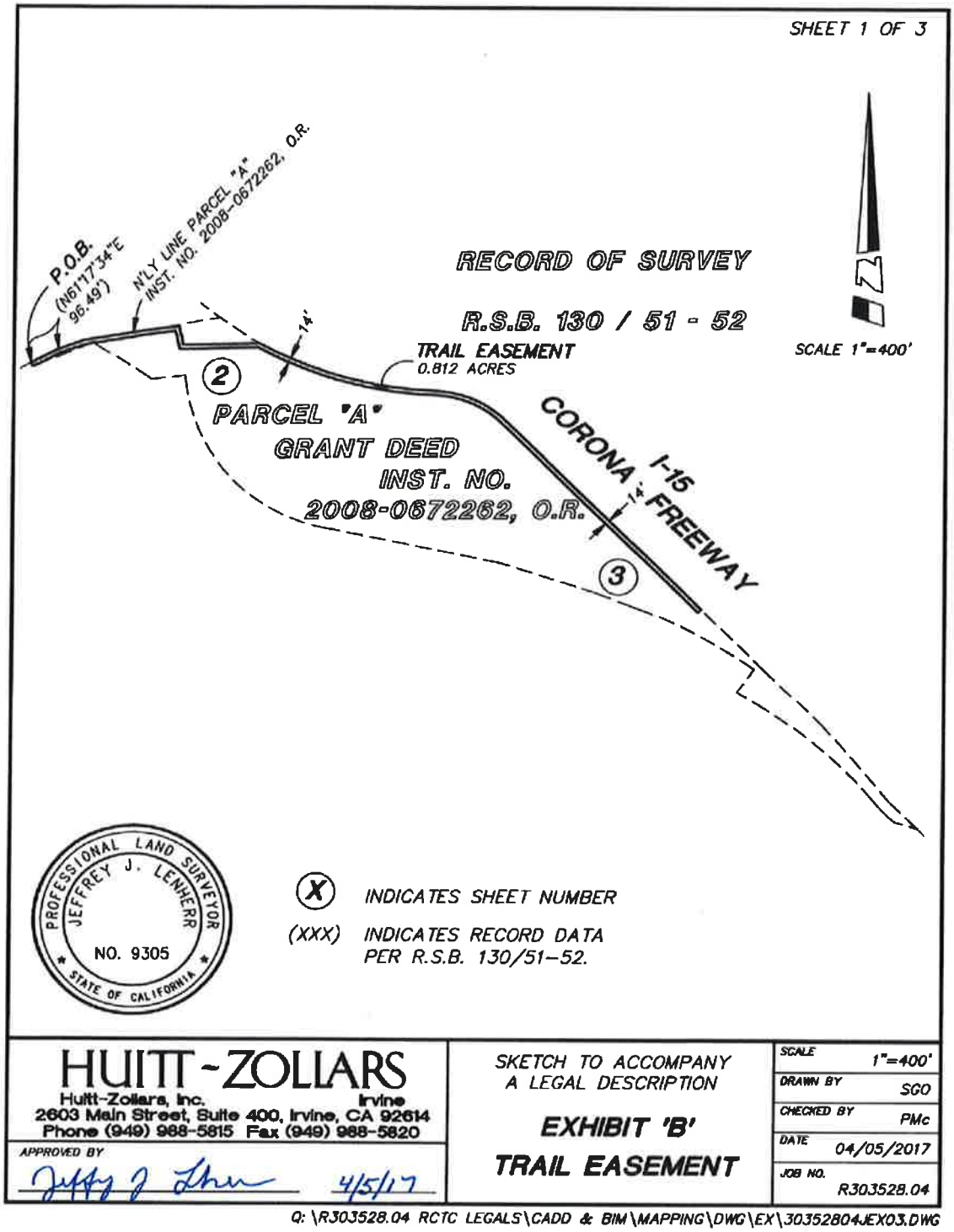
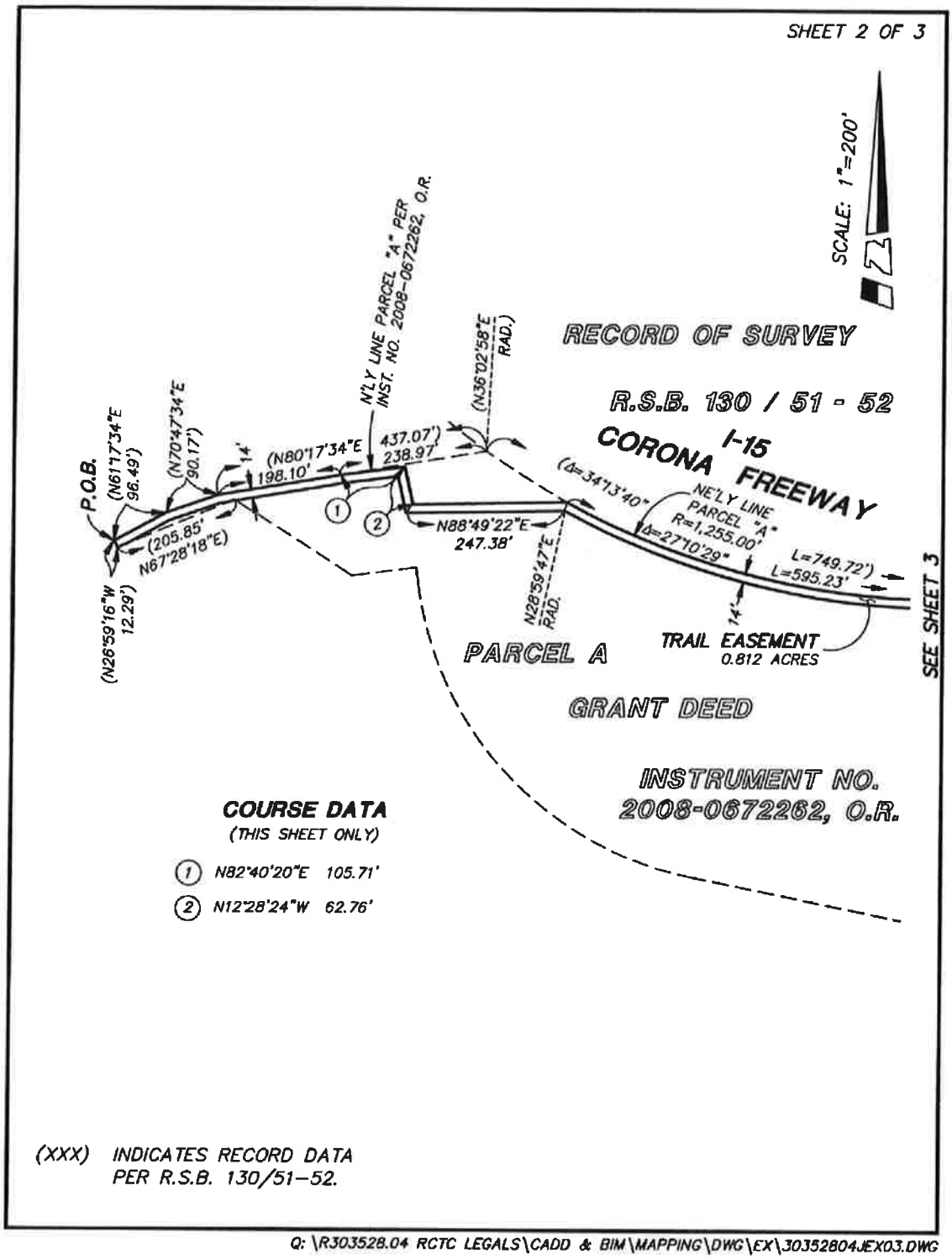

SHEET 1 OF 3
P.O.B.
(N61°17'34"E
96.49')
N'LY LINE PARCEL "A"
INST. NO. 2008-0672262, O.R.
RECORD OF SURVEY
R.S.B. 130 / 51 - 52
SCALE 1"=400'
14'
TRAIL EASEMENT
0.812 ACRES
2
PARCEL "A"
GRANT DEED
INST. NO.
2008-0672262, O.R.
CORONA
I-15 FREEWAY
14'
3
PROFESSIONAL LAND SURVEYOR
JEFFREY J. LENHERR
NO. 9305
STATE OF CALIFORNIA
(X) INDICATES SHEET NUMBER
(XXX) INDICATES RECORD DATA
PER R.S.B. 130/51-52.
HUITT-ZOLLARS
Huitt-Zollars, Inc. Irvine
2603 Main Street, Suite 400, Irvine, CA 92614
Phone (949) 988-5815 Fax (949) 988-5820
APPROVED BY
4/5/17
SKETCH TO ACCOMPANY
A LEGAL DESCRIPTION
EXHIBIT 'B'
TRAIL EASEMENT
SCALE 1"=400'
DRAWN BY SGO
CHECKED BY PMc
DATE 04/05/2017
JOB NO. R303528.04
Q:\R303528.04 RCTC LEGALS\CADD & BIM\MAPPING\DWG\EX\30352804JEX03.DWG

Exhibit 2



Q:\R303528.04 RCTC LEGALS\CADD & BIM\MAPPING\DWG\EX\30352804JEX03.DWG

Exhibit 2

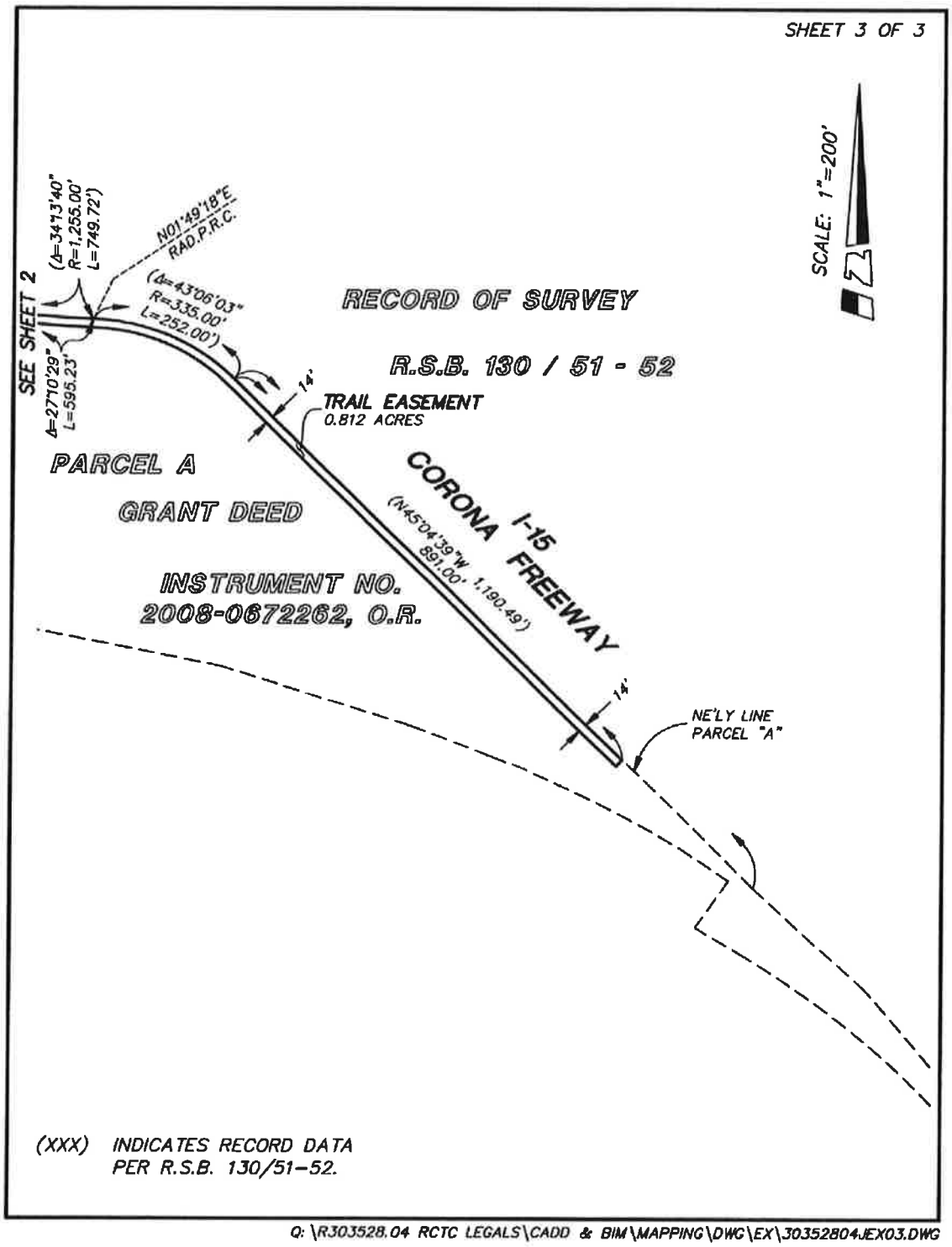
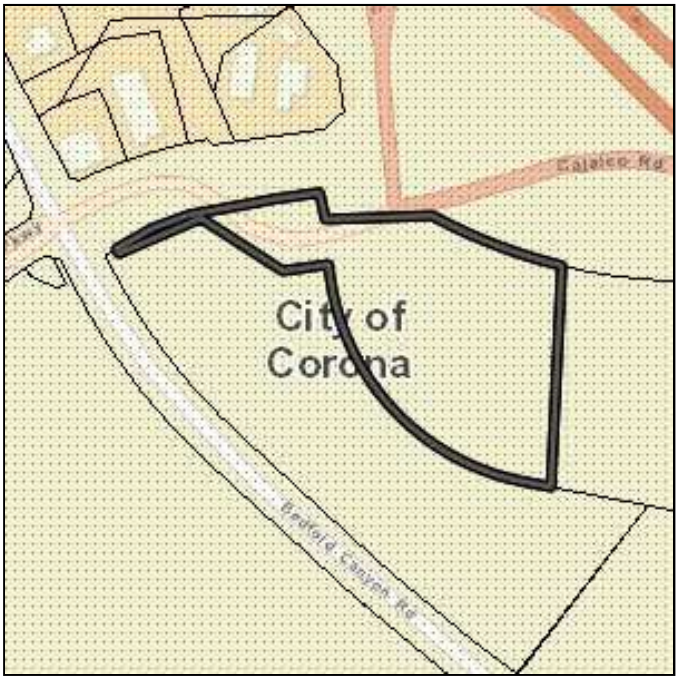

SHEET 3 OF 3
SCALE: 1"=200'
RECORD OF SURVEY
R.S.B. 130 / 51 - 52
SEE SHEET 2
(Δ=34°13'40"
R=1,255.00'
L=749.72')
N01°49'18"E
RAD.P.R.C.
(Δ=43°06'03"
R=335.00'
L=252.00')
Δ=27°10'29"
L=595.23'
14'
TRAIL EASEMENT
0.812 ACRES
PARCEL A
GRANT DEED
INSTRUMENT NO.
2008-0672262, O.R.
CORONA I-15 FREEWAY
(N45°04'39"W 1,190.49')
891.00'
14'
NE'LY LINE
PARCEL "A"
(XXX) INDICATES RECORD DATA
PER R.S.B. 130/51-52.
Q:\R303528.04 RCTC LEGALS\CADD & BIM\MAPPING\DWG\EX\30352804JEX03.DWG

Exhibit 2

Riverside County Parcel Report

APN(s) 279-240-033

MAPS/IMAGES



PARCEL

APN	279-240-033-8
Previous APN	279-240-033 came from 279-190-004
Owners	Not Available Online
Address	279-240-033 NOT AVAILABLE
Mailing Address	279-240-033 P O BOX 12008 RIVERSIDE CA 92502
Legal Description	279-240-033 Recorded Book/Page: MB 270/90 Subdivision Name: TR 28476 Lot/Parcel: 9 Block: Tract Number: 28476
Lot Size	279-240-033 6.44
Property Characteristics	279-240-033 Year Constructed: Baths: 0.00 Bedrooms: 0

Construction Type: SPECIAL
Garage Type: CONSTRUCTION
Property Area (sq ft): 0
Roof Type: UNKNOWN
Stories:
Pool: NO
Central Cool: NO
Central Heat: NO

Supervisorial District	KAREN SPIEGEL, DISTRICT 2
City Boundary	CORONA
Land Use Designations	CITY
Zoning Classifications (ORD. 348)	CONTACT THE CITY FOR MORE INFORMATION

PLUS PERMITS & CASES

Administrative Cases

Case	Case Description	Status
N/A	N/A	N/A

Building and Safety Cases

Case	Case Description	Status
182578	AGRI IRRIG PUMP 10 HP	FINAL

Code Cases

Case	Case Description	Status
N/A	N/A	N/A

Fire Cases

Case	Case Description	Status
N/A	N/A	N/A

Planning Cases

Case	Case Description	Status
LLA04132	ADJUST LINE FOR PCL A TO BE ANNEXED TO CITY/CORONA	APPROVED

Survey Cases

Case	Case Description	Status
N/A	N/A	N/A

Transportation Cases

Case	Case Description	Status
N/A	N/A	N/A

DEPARTMENT of ENVIRONMENTAL HEALTH PERMITS

Septic Permits

Record Id	Application Date	Plan Check Approved Date	Final Inspection Date	Approved Date
N/A	N/A	N/A	N/A	N/A

Well Water Permits

Record Id	PE	Permit Paid Date	Permit Approved Date	Well Finaled Date
N/A	N/A	N/A	N/A	N/A

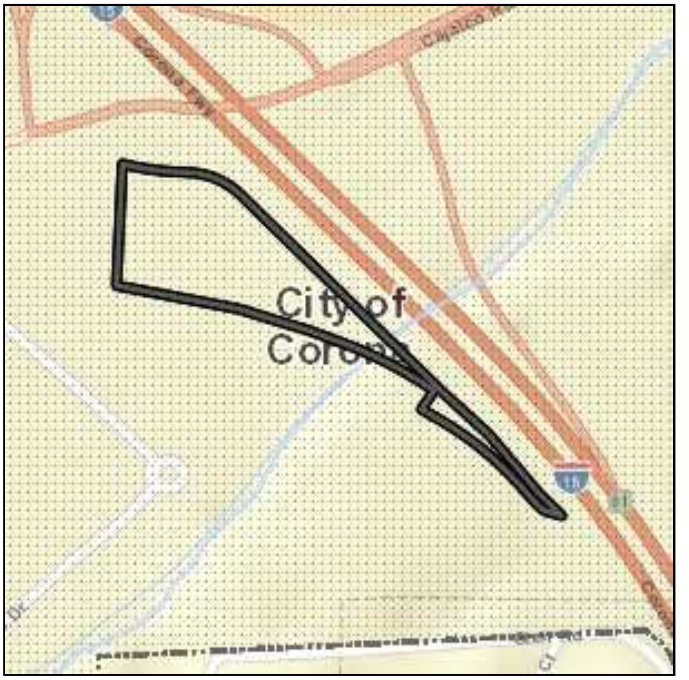
* DISCLAIMER *

Maps, permit information and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

Riverside County Parcel Report

APN(s) 279-240-019

MAPS/IMAGES



PARCEL

APN	279-240-019-6
Previous APN	279-240-019 came from 279-240-000
Owners	Not Available Online
Address	279-240-019 NOT AVAILABLE
Mailing Address	279-240-019 P O BOX 12008 RIVERSIDE CA 92502
Legal Description	279-240-019 Recorded Book/Page: Subdivision Name: Lot/Parcel: Block: Tract Number: 0
Lot Size	279-240-019 11.33
Property Characteristics	279-240-019 Year Constructed: Baths: 0.00 Bedrooms: 0

Construction Type: SPECIAL
Garage Type: CONSTRUCTION
Property Area (sq ft): 0
Roof Type: UNKNOWN
Stories:
Pool: NO
Central Cool: NO
Central Heat: NO

Supervisorial District	KAREN SPIEGEL, DISTRICT 2
City Boundary	CORONA
Land Use Designations	CITY
Zoning Classifications (ORD. 348)	CONTACT THE CITY FOR MORE INFORMATION

PLUS PERMITS & CASES

Administrative Cases

Case	Case Description	Status
N/A	N/A	N/A

Building and Safety Cases

Case	Case Description	Status
N/A	N/A	N/A

Code Cases

Case	Case Description	Status
N/A	N/A	N/A

Fire Cases

Case	Case Description	Status
N/A	N/A	N/A

Planning Cases

Case	Case Description	Status
N/A	N/A	N/A

Survey Cases

Case	Case Description	Status
N/A	N/A	N/A

Transportation Cases

Case	Case Description	Status
N/A	N/A	N/A

DEPARTMENT of ENVIRONMENTAL HEALTH PERMITS

Septic Permits

Record Id	Application Date	Plan Check Approved Date	Final Inspection Date	Approved Date
N/A	N/A	N/A	N/A	N/A

Well Water Permits

Record Id	PE	Permit Paid Date	Permit Approved Date	Well Finaled Date
N/A	N/A	N/A	N/A	N/A

* DISCLAIMER *

Maps, permit information and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

FEET
0 50 100 200
0 1/2 1 2
INCHES

EAGLE GLEN PARKWAY / CAJALCO ROAD

BEDFORD CYN. RD.

SITE ENTRANCE

EXISTING F.H.

ACCESS ROAD

TRAIL/ACCESS ROAD

LANDSCAPE SETBACK

COMMERCIAL–ARANTINE
8.35 AC NET
10.03 GROSS

COMMERCIAL–RCTC
12.23 AC NET
18.13 AC GROSS

BEDFORD CANYON RD.

LOT LINE ADJUSTMENT REQUIRED

BASIN/LIFT STATION ACCESS

24' EMERGENCY ACCESS

15' ACCESS

FUTURE SCE SWITH STATION

PAD ELEV.=921

FUTURE BRIDGE

OPEN SPACE
5.9 AC NET
(BASIN AREA 1.5 AC)

BASIN

INTERSTATE 15

PREPARED BY:

HUNSAKER & ASSOCIATES
I R V I N E , I N C .
PLANNING • ENGINEERING • SURVEYING
Three Hughes • Irvine, CA 92618
FX: (949) 583-0759 • PH: (949) 583-1010

AREA BREAKDOWN
BEDFORD MARKET PLACE
08/21/2017

WO: 4209–1

APPENDIX D

PROFESSIONAL QUALIFICATIONS

EBI Consulting
environmental | engineering | due diligence

Christopher Evans
Project Scientist
Playa Del Rey, CA 90292
Mobile: 805-704-1222

Summary of Experience

ALPHA ENVIRONMENTAL

Project Environmental Geologist- *Dec 2014 – October 2018*

- Performed numerous Phase I ESA and TSA reports while conforming to current ASTM Standards
- Proficient in analyzing EDR documents (Radius Map Report, Lightbox, Sanborn Maps, etc.)
- Lead project manager: excelled at supervision of allocated tasks, time management, establishing priorities, meeting deadlines; principal report reviewer
- Executed numerous site visits; performed to ASTM standards, skillful at obtaining appropriate information (i.e. tenant history, previous land use, potential RECs) via observation and/or interviews, locations include: Los Angeles, Riverside, Orange, San Bernardino, and San Diego counties, Las Vegas, NV, Phoenix, AZ, Portland OR, Seattle WA
- Savvy researcher who knows how to find and collect relevant data (i.e. building departments, public libraries, DOGGR, Geotracker, Envirostor online databases, etc.), proficient in submitting FOIA requests to appropriate agencies
- Versed in customer interaction; accomplished in client acquisition
- Experienced in Phase II ESA report writing, efficient in the development of Phase II scopes of work, knowledgeable of EPA's maximum concentration levels
- Performed sub-slab vapor sampling; installed vapor pins, collected vapor samples into Tedlar bags.
- Supervised geophysical surveys; directed survey personnel to pertinent areas of interest
- Participated in a Soil Certification project; analysis of laboratory data, report writing

UNITED STATES GEOLOGICAL SURVEY

Hydrologic Technician- *Aug 2011 – May 2013*

- Conducted detailed on-site inspections and generated comprehensive field reports
- Installed, operated, maintained six stream gaging sites; attained meticulous depth to water measurements from monitoring wells
- Served as project manager in charge of installing new monitoring site; charged with acceptance testing and implementation of new radar software, including training of end users

UNIVERSITY OF NEVADA LAS VEGAS

Graduate Assistant- *Aug 2009 – Dec 2011*

- Instructor in charge of two lab sections (20+ students per semester)
- Conceived and delivered customized instruction based on students individual requirements; set and maintained high standards while instilling confidence in students to succeed
- Demonstrated strong public speaking, communication, and leadership skills by delivering lectures and performing one on one informational sessions with students

Education

Bachelor of Science, Geology- University of Southern California, Los Angeles, CA

Professional Registrations

OSHA 40 Hour Hazwoper Certified

EBI Consulting
environmental | engineering | due diligence

Michael S. Ryniak
Program Manager
465 Shadow Mountain Dr.
Prescott, AZ 86301
Office: 928.227.4669 Mobile: 928.925.4173

SUMMARY OF EXPERIENCE

Michael S. Ryniak is an environmental scientist with more than 25 years of environmental industry experience specializing in environmental investigations and site assessments. Mr. Ryniak also has experience conducting NEPA assessments, subsurface investigations, as well as performing indoor air quality, asbestos, radon, lead paint, and lead water surveys. He has also prepared asbestos and lead paint operations and maintenance plans and moisture management plans.

Mr. Ryniak has conducted over 1,000 environmental site-acquisition assessments/due diligence assignments for a wide range of properties throughout the United States. These assessments have been performed to evaluate site conditions, potential off-site liabilities, environmental control systems, and site remediation costs in order to advise prospective buyers, current operators, and owners of potential and existing environmental concerns. Furthermore, as a supervisor, Mr. Ryniak has been responsible for the review and client technical relations for over 4,000 additional Phase I Environmental Site Assessments. Mr. Ryniak has worked with corporate environmental officers, numerous Wall Street lending institutions, legal counsel, governmental agencies, rating agencies, investment companies and real estate brokers to develop strategies for managing properties with environmental concerns.

At EBI Consulting, Mr. Ryniak provides Senior Level review and quality control of Phase I Site Assessments and Environmental Screening reports, as well as client support, managing selected client accounts. Mr. Ryniak has over five years experience concentrating on providing these services to HUD Lender clients. Additionally, Mr. Ryniak is involved in marketing outreach activities with local Arizona banks.

RELEVANT PROJECT EXPERIENCE

ENVIRONMENTAL SITE ASSESSMENTS: Mr. Ryniak has conducted ASTM Phase I Environmental Site Assessments, Environmental Site Screenings, and soil and groundwater sampling for various clients and has prepared Phase I and Phase II reports for a variety of properties located in the United States. These properties have included industrial, commercial, retail, and multi-family residential properties, as well as telecommunications sites. Mr. Ryniak has conducted assessments at numerous senior living facilities, including all levels of senior care. Mr. Ryniak has also conducted indoor air quality, radon, asbestos-containing materials, lead-based paint and lead water surveys. Mr. Ryniak participated in remedial investigation and feasibility studies for four Arizona "Superfund" sites in Phoenix and Tucson.

OPERATIONS & MAINTENANCE PLANS: Mr. Ryniak has prepared asbestos and lead paint operations and maintenance plans, and moisture management plans for a variety of commercial and multi-family residential facilities throughout the United States.

EDUCATION

Bachelor of Arts, Anthropology, University of Notre Dame
Geology Masters Degree Program, Arizona State University

Michael S. Ryniak
Program Manager

PROFESSIONAL REGISTRATIONS

EPA/AHERA Accredited and Licensed Asbestos Inspector and Management Planner
40-Hour OSHA Hazardous Worker

APPENDIX E

REGULATORY DATABASE REPORT

Bedford Marketplace - RCTCT Portion
Intersections of Eagle Glen Parkway / Cajalco Road
Corona, CA 92881

Inquiry Number: 05678071.2r
June 10, 2019

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION	PAGE
Executive Summary	ES1
Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	8
Orphan Summary	258
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting SSURGO Soil Map	A-5
Physical Setting Source Map	A-15
Physical Setting Source Map Findings	A-17
Physical Setting Source Records Searched	PSGR-1

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2019 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

INTERSECTIONS OF EAGLE GLEN PARKWAY / CAJALCO ROAD
CORONA, CA 92881

COORDINATES

Latitude (North):	33.8242870 - 33° 49' 27.43''
Longitude (West):	117.5195980 - 117° 31' 10.55''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	451916.3
UTM Y (Meters):	3742601.0
Elevation:	884 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5636469 CORONA SOUTH, CA
Version Date:	2012
East Map:	5636475 LAKE MATHEWS, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140603
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
INTERSECTIONS OF EAGLE GLEN PARKWAY / CAJALCO ROAD
CORONA, CA 92881

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	PARTY CITY	2415 TUSCANY ST	CERS HAZ WASTE, HAZNET, CERS	Lower	1 ft.
A2	BED BATH & BEYOND #6	2563 TUSCANY ST	RCRA NonGen / NLR	Lower	1 ft.
B3	STAPLES THE OFFICE S	3439 GRAND OAKS	CERS HAZ WASTE	Lower	1 ft.
B4	MICHAELS STORES INC	3469 GRAND OAKS AVE	RCRA NonGen / NLR	Lower	1 ft.
B5	MICHAEL'S STORE # 47	3469 GRAND OAKS	CERS HAZ WASTE	Lower	1 ft.
C6	TARGET STORE T1548	2615 TUSCANY ST	RCRA-LQG	Lower	1 ft.
D7	CORONA INDUSTRIAL SA	20125 TEMESCAL CANYO	RCRA-SQG, EMI, CERS	Lower	1 ft.
C8	CVS PHARMACY #16876	2615 TUSCANY ST STE	CERS HAZ WASTE, CERS	Lower	1 ft.
A9	BED, BATH AND BEYOND	2563 TUSCANY ST	CERS HAZ WASTE, HAZNET	Lower	1 ft.
C10	CVS PHARMACY #16826	2615 TUSCANNY ST STE	RCRA-CESQG, FINDS, ECHO	Lower	1 ft.
E11	KOHL'S DEPARTMENT ST	2489 TUSCANY ST	CERS HAZ WASTE, CERS	Lower	1 ft.
E12	ROSS DRESS FOR LESS	2519 TUSCANY ST	RCRA NonGen / NLR	Lower	1 ft.
E13	BEST BUY #0847	2430 TUSCANY ST	CERS HAZ WASTE	Lower	1 ft.
14	TOYS"R" US #6622	3665 GRAND OAKS	CERS HAZ WASTE	Lower	1 ft.
E15	MARSHALLS 0605	2459 TUSCANY ST	CERS HAZ WASTE, CERS	Lower	1 ft.
B16	PETCO STORE #1127	3485 GRAND OAKS	RCRA NonGen / NLR	Lower	1 ft.
B17	PETCO #1127	3485 GRAND OAKS	CERS HAZ WASTE	Lower	1 ft.
F18	ULTA BEAUTY 212	2541 TUSCANY ST	RCRA NonGen / NLR	Lower	1 ft.
E19	ROSS DRESS FOR LESS	2519 TUSCANY ST	CERS HAZ WASTE, HAZNET, CERS	Lower	1 ft.
F20	ULTA BEAUTY #212	2541 TUSCANY ST	CERS HAZ WASTE, HAZNET	Lower	1 ft.
G21	PACIFIC CLAY PRODUCT	20325 TEMESCAL CANYO	ENVIROSTOR, CPS-SLIC, CHMIRS, CERS	Lower	46, 0.009, ENE
G22	CES ENERGY CORONA, L	20325 TEMESCAL CANYO	SWEEPS UST, HIST UST, CA FID UST, EMI, CERS	Lower	46, 0.009, ENE
G23	GAMBOA TRUCK LINES	20305 TEMESCAL CYN	RCRA-SQG, FINDS, ECHO, HAZNET	Lower	55, 0.010, ENE
D24	UPLAND DIVISION	20120 TEMESCAL CANYO	HIST UST	Lower	88, 0.017, NE
G25	EVMWD	20320 TEMESCAL CANYO	RCRA NonGen / NLR	Lower	123, 0.023, ENE
26	CORONA INDUSTRIAL SA	10000 STOCKDALE HWY,	MINES	Lower	169, 0.032, NNE
27	LISTON BRICK COMPANY	3710 TEMESCAL CANYON	SEMS, PRP, ECHO	Lower	340, 0.064, ESE
H28	ARANTINE HILLS LIFT	2590 BEDFORD CANYON	CERS TANKS, CERS	Higher	616, 0.117, West
H29	MCMILLAN BROS CITRUS	20551 BEDFORD CANYON	HIST UST	Higher	675, 0.128, West
I30	EAGLE GLEN MOBIL	2261 EAGLE GLEN PKWY	CERS HAZ WASTE, CERS TANKS, HAZNET, CERS	Higher	714, 0.135, SSW
I31	EAGLE GLEN MOBIL	2261 EAGLE GLEN PKWY	UST	Higher	714, 0.135, SSW
J32	STATER BROS MARKETS	2243 EAGLE GLEN PKWY	RCRA-LQG	Higher	739, 0.140, WSW
J33	STATER BROS MARKETS	2243 EAGLE GLEN PKWY	CERS HAZ WASTE, HAZNET, CERS	Higher	739, 0.140, WSW
J34	CORKY'S KITCHEN AND	3811 BEDFORD CANYON	DRYCLEANERS, CERS	Higher	870, 0.165, WSW
J35	EAGLE DRY CLEANERS	3811 BEDFORD CANYON	DRYCLEANERS	Higher	870, 0.165, WSW
K36	CORONA TRUCKING	19885 TEMESCAL CNYN	LUST, HIST CORTESE	Lower	1373, 0.260, NNE
K37	CORONA TRUCKING	19885 TEMESCAL CANYO	LUST, HIST UST, NPDES, CIWQS, CERS	Lower	1373, 0.260, NNE
L38	LISTON ALUMINUM CO	20401 TEMESCAL CYN	SEMS-ARCHIVE, LUST, CPS-SLIC, WDS, CERS	Lower	1830, 0.347, ESE
L39	LISTON ALUMINUM	20401 TEMESCAL CNYN	LUST, SWEEPS UST, HIST CORTESE	Lower	1830, 0.347, ESE

MAPPED SITES SUMMARY

Target Property Address:
INTERSECTIONS OF EAGLE GLEN PARKWAY / CAJALCO ROAD
CORONA, CA 92881

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
40	ROBERTSONS CORONA RO	9001 CAJALCO ROAD	ENVIROSTOR, SCH, CERS HAZ WASTE, CERS TANKS, EMI,..	Lower	2262, 0.428, East
41	LISTON ALUMINUM COMP	9107 CAJALCO RD	RESPONSE, ENVIROSTOR, HIST Cal-Sites, CERS	Lower	3256, 0.617, East
42	EL CERRITO ELEMENTAR	7581 RUDELL ROAD	ENVIROSTOR, SCH	Higher	3975, 0.753, NNW

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System
US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System

State and tribal leaking storage tank lists

INDIAN LUST ---------- Leaking Underground Storage Tanks on Indian Land

EXECUTIVE SUMMARY

State and tribal registered storage tank lists

FEMA UST ---- Underground Storage Tank Listing
AST ---- Aboveground Petroleum Storage Tank Facilities
INDIAN UST ---- Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

VCP ---- Voluntary Cleanup Program Properties
INDIAN VCP ---- Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS ---- Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT ---- Waste Management Unit Database
SWRCY ---- Recycler Database
HAULERS ---- Registered Waste Tire Haulers Listing
INDIAN ODI ---- Report on the Status of Open Dumps on Indian Lands
ODI ---- Open Dump Inventory
DEBRIS REGION 9 ---- Torres Martinez Reservation Illegal Dump Site Locations
IHS OPEN DUMPS ---- Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ---- Delisted National Clandestine Laboratory Register
SCH ---- School Property Evaluation Program
CDL ---- Clandestine Drug Labs
Toxic Pits ---- Toxic Pits Cleanup Act Sites
US CDL ---- National Clandestine Laboratory Register
PFAS ---- PFAS Contamination Site Location Listing

Local Land Records

LIENS ---- Environmental Liens Listing
LIENS 2 ---- CERCLA Lien Information
DEED ---- Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ---- Hazardous Materials Information Reporting System
CHMIRS ---- California Hazardous Material Incident Report System
LDS ---- Land Disposal Sites Listing
MCS ---- Military Cleanup Sites Listing
SPILLS 90 ---- SPILLS 90 data from FirstSearch

Other Ascertainable Records

FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
FINDS	Facility Index System/Facility Registry System
UXO	Unexploded Ordnance Sites
ECHO	Enforcement & Compliance History Information
DOCKET HWC	Hazardous Waste Compliance Docket Listing
FUELS PROGRAM	EPA Fuels Program Registered Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
HAZNET	Facility and Manifest Data
ICE	ICE
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records

UIC ---------- UIC Listing
UIC GEO ---------- UIC GEO (GEOTRACKER)
WASTEWATER PITS ---------- Oil Wastewater Pits Listing
WDS ---------- Waste Discharge System
MILITARY PRIV SITES ---------- MILITARY PRIV SITES (GEOTRACKER)
PROJECT ---------- PROJECT (GEOTRACKER)
WDR ---------- Waste Discharge Requirements Listing
CIWQS ---------- California Integrated Water Quality System
CERS ---------- CERS
NON-CASE INFO ---------- NON-CASE INFO (GEOTRACKER)
WIP ---------- Well Investigation Program Case List
OTHER OIL GAS ---------- OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS ---------- PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT ---------- SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ ---------- Well Stimulation Project (GEOTRACKER)

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP ---------- EDR Proprietary Manufactured Gas Plants
EDR Hist Auto ---------- EDR Exclusive Historical Auto Stations
EDR Hist Cleaner ---------- EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF ---------- Recovered Government Archive Solid Waste Facilities List
RGA LUST ---------- Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Federal CERCLIS list

SEMS: SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the

United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

A review of the SEMS list, as provided by EDR, and dated 04/11/2019 has revealed that there is 1 SEMS site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
LISTON BRICK COMPANY Site ID: 0908693 EPA Id: CAN000908693	***3710 TEMESCAL CANYON***	***ESE 0 - 1/8 (0.064 mi.)***	***27***	***99***

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

A review of the SEMS-ARCHIVE list, as provided by EDR, and dated 04/11/2019 has revealed that there is 1 SEMS-ARCHIVE site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
LISTON ALUMINUM CO Site ID: 0901605 EPA Id: CAD078132362	***20401 TEMESCAL CYN***	***ESE 1/4 - 1/2 (0.347 mi.)***	***L38***	***165***

Federal RCRA generators list

RCRA-LQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

A review of the RCRA-LQG list, as provided by EDR, and dated 03/25/2019 has revealed that there are 2 RCRA-LQG sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
STATER BROS MARKETS	2243 EAGLE GLEN PKWY	WSW 1/8 - 1/4 (0.140 mi.)	J32	142

EPA ID:: CAL000334464

Lower Elevation	Address	Direction / Distance	Map ID	Page
TARGET STORE T1548 EPA ID:: CAR000217893	2615 TUSCANY ST	0 - 1/8 (0.000 mi.)	C6	20

RCRA-SQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

A review of the RCRA-SQG list, as provided by EDR, and dated 03/25/2019 has revealed that there are 2 RCRA-SQG sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CORONA INDUSTRIAL SA EPA ID:: CAD983582511	***20125 TEMESCAL CANYO***	***0 - 1/8 (0.000 mi.)***	***D7***	***26***
GAMBOA TRUCK LINES EPA ID:: CAD981996614	***20305 TEMESCAL CYN***	***ENE 0 - 1/8 (0.010 mi.)***	***G23***	***93***

RCRA-CESQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

A review of the RCRA-CESQG list, as provided by EDR, and dated 03/25/2019 has revealed that there is 1 RCRA-CESQG site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CVS PHARMACY #16826 EPA ID:: CAR000258582	***2615 TUSCANNY ST STE***	***0 - 1/8 (0.000 mi.)***	***C10***	***43***

State- and tribal - equivalent NPL

RESPONSE: Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

A review of the RESPONSE list, as provided by EDR, has revealed that there is 1 RESPONSE site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
LISTON ALUMINUM COMP Database: RESPONSE, Date of Government Version: 01/28/2019	***9107 CAJALCO RD***	***E 1/2 - 1 (0.617 mi.)***	***41***	***250***

Status: Certified
Facility Id: 33330023

State- and tribal - equivalent CERCLIS

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 01/28/2019 has revealed that there are 4 ENVIROSTOR sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
EL CERRITO ELEMENTAR	*7581 RUDELL ROAD*	*NNW 1/2 - 1 (0.753 mi.)*	*42*	*254*

Lower Elevation	Address	Direction / Distance	Map ID	Page
PACIFIC CLAY PRODUCT	*20325 TEMESCAL CANYO*	*ENE 0 - 1/8 (0.009 mi.)*	*G21*	*79*
ROBERTSONS CORONA RO	*9001 CAJALCO ROAD*	*E 1/4 - 1/2 (0.428 mi.)*	*40*	*172*
LISTON ALUMINUM COMP	*9107 CAJALCO RD*	*E 1/2 - 1 (0.617 mi.)*	*41*	*250*

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the LUST list, as provided by EDR, has revealed that there are 4 LUST sites within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CORONA TRUCKING	*19885 TEMESCAL CNYN*	*NNE 1/4 - 1/2 (0.260 mi.)*	*K36*	*158*

Database: LUST REG 8, Date of Government Version: 02/14/2005
Database: RIVERSIDE CO. LUST, Date of Government Version: 04/11/2019
Facility Status: Case Closed
Facility Id: 91447
Facility Status: 9
Global ID: T0606500002

CORONA TRUCKING	*19885 TEMESCAL CANYO*	*NNE 1/4 - 1/2 (0.260 mi.)*	*K37*	*160*

Database: LUST, Date of Government Version: 12/10/2018
Status: Completed - Case Closed
Global Id: T0606500002

LISTON ALUMINUM CO	*20401 TEMESCAL CYN*	*ESE 1/4 - 1/2 (0.347 mi.)*	*L38*	*165*

Database: LUST, Date of Government Version: 12/10/2018

Status: Completed - Case Closed
Global Id: T0606500341

LISTON ALUMINUM ***20401 TEMESCAL CNYN*** ***ESE 1/4 - 1/2 (0.347 mi.)*** ***L39*** ***170***
Database: LUST REG 8, Date of Government Version: 02/14/2005
Database: RIVERSIDE CO. LUST, Date of Government Version: 04/11/2019
Facility Status: Case Closed
Facility Id: 93319
Facility Status: 9
Global ID: T0606500341

CPS-SLIC: Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the CPS-SLIC list, as provided by EDR, has revealed that there are 2 CPS-SLIC sites within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
PACIFIC CLAY PRODUCT	***20325 TEMESCAL CANYO***	***ENE 0 - 1/8 (0.009 mi.)***	***G21***	***79***
Database: CPS-SLIC, Date of Government Version: 12/10/2018 Database: SLIC REG 8, Date of Government Version: 04/03/2008 Global Id: SL208433898 Global Id: T10000000196 Facility Status: Closed Facility Status: Completed - Case Closed				
LISTON ALUMINUM CO	***20401 TEMESCAL CYN***	***ESE 1/4 - 1/2 (0.347 mi.)***	***L38***	***165***
Database: CPS-SLIC, Date of Government Version: 12/10/2018 Database: SLIC REG 8, Date of Government Version: 04/03/2008 Global Id: SLT8R1534142 Facility Status: Closed Facility Status: Completed - Case Closed				

State and tribal registered storage tank lists

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the State Water Resources Control Board's Hazardous Substance Storage Container Database.

A review of the UST list, as provided by EDR, and dated 12/10/2018 has revealed that there is 1 UST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
EAGLE GLEN MOBIL Facility Id: FA0024172	2261 EAGLE GLEN PKWY	SSW 1/8 - 1/4 (0.135 mi.)	I31	142

EXECUTIVE SUMMARY

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Hazardous waste / Contaminated Sites

HIST Cal-Sites: Formerly known as ASPIS, this database contains both known and potential hazardous substance sites. The source is the California Department of Toxic Substance Control. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

A review of the HIST Cal-Sites list, as provided by EDR, and dated 08/08/2005 has revealed that there is 1 HIST Cal-Sites site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
LISTON ALUMINUM COMP	***9107 CAJALCO RD***	***E 1/2 - 1 (0.617 mi.)***	***41***	***250***

CERS HAZ WASTE: List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

A review of the CERS HAZ WASTE list, as provided by EDR, and dated 04/09/2019 has revealed that there are 14 CERS HAZ WASTE sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
EAGLE GLEN MOBIL	***2261 EAGLE GLEN PKWY***	***SSW 1/8 - 1/4 (0.135 mi.)***	***I30***	***104***
STATER BROS MARKETS	***2243 EAGLE GLEN PKWY***	***WSW 1/8 - 1/4 (0.140 mi.)***	***J33***	***144***

Lower Elevation	Address	Direction / Distance	Map ID	Page
PARTY CITY	***2415 TUSCANY ST***	***0 - 1/8 (0.000 mi.)***	***1***	***8***
STAPLES THE OFFICE S	3439 GRAND OAKS	0 - 1/8 (0.000 mi.)	B3	15
MICHAEL'S STORE # 47	3469 GRAND OAKS	0 - 1/8 (0.000 mi.)	B5	18
CVS PHARMACY #16876	***2615 TUSCANY ST STE***	***0 - 1/8 (0.000 mi.)***	***C8***	***30***
BED, BATH AND BEYOND	***2563 TUSCANY ST***	***0 - 1/8 (0.000 mi.)***	***A9***	***39***
KOHL'S DEPARTMENT ST	***2489 TUSCANY ST***	***0 - 1/8 (0.000 mi.)***	***E11***	***46***
BEST BUY #0847	2430 TUSCANY ST	0 - 1/8 (0.000 mi.)	E13	53
TOYS"R" US #6622	3665 GRAND OAKS	0 - 1/8 (0.000 mi.)	14	55
MARSHALLS 0605	***2459 TUSCANY ST***	***0 - 1/8 (0.000 mi.)***	***E15***	***57***
PETCO #1127	3485 GRAND OAKS	0 - 1/8 (0.000 mi.)	B17	63
ROSS DRESS FOR LESS	***2519 TUSCANY ST***	***0 - 1/8 (0.000 mi.)***	***E19***	***67***
ULTA BEAUTY #212	***2541 TUSCANY ST***	***0 - 1/8 (0.000 mi.)***	***F20***	***75***

Local Lists of Registered Storage Tanks

SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there is 1 SWEEPS UST site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CES ENERGY CORONA, L	***20325 TEMESCAL CANYO***	***ENE 0 - 1/8 (0.009 mi.)***	***G22***	***85***
Status: A Tank Status: A Comp Number: 40231				

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there are 3 HIST UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MCMILLAN BROS CITRUS Facility Id: 00000043326	20551 BEDFORD CANYON	W 1/8 - 1/4 (0.128 mi.)	H29	103

Lower Elevation	Address	Direction / Distance	Map ID	Page
CES ENERGY CORONA, L Facility Id: 00000040231	***20325 TEMESCAL CANYO***	***ENE 0 - 1/8 (0.009 mi.)***	***G22***	***85***
UPLAND DIVISION Facility Id: 00000002471	20120 TEMESCAL CANYO	NE 0 - 1/8 (0.017 mi.)	D24	96

CA FID UST: The Facility Inventory Database contains active and inactive underground storage tank locations. The source is the State Water Resource Control Board.

A review of the CA FID UST list, as provided by EDR, and dated 10/31/1994 has revealed that there is 1 CA FID UST site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CES ENERGY CORONA, L Facility Id: 33006477 Status: A	***20325 TEMESCAL CANYO***	***ENE 0 - 1/8 (0.009 mi.)***	***G22***	***85***

CERS TANKS: List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

A review of the CERS TANKS list, as provided by EDR, and dated 04/09/2019 has revealed that there are 2 CERS TANKS sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ARANTINE HILLS LIFT	***2590 BEDFORD CANYON***	***W 0 - 1/8 (0.117 mi.)***	***H28***	***100***
EAGLE GLEN MOBIL	***2261 EAGLE GLEN PKWY***	***SSW 1/8 - 1/4 (0.135 mi.)***	***I30***	***104***

Other Ascertainable Records

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 03/25/2019 has revealed that there are 6 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
BED BATH & BEYOND #6 EPA ID:: CAL000362369	2563 TUSCANY ST	0 - 1/8 (0.000 mi.)	A2	14
MICHAELS STORES INC EPA ID:: CAL000371259	3469 GRAND OAKS AVE	0 - 1/8 (0.000 mi.)	B4	17
ROSS DRESS FOR LESS EPA ID:: CAL000397553	2519 TUSCANY ST	0 - 1/8 (0.000 mi.)	E12	52
PETCO STORE #1127 EPA ID:: CAL000388251	3485 GRAND OAKS	0 - 1/8 (0.000 mi.)	B16	62
ULTA BEAUTY 212 EPA ID:: CAL000388863	2541 TUSCANY ST	0 - 1/8 (0.000 mi.)	F18	65
EVMWD EPA ID:: CAC002987337	20320 TEMESCAL CANYO	ENE 0 - 1/8 (0.023 mi.)	G25	97

DRYCLEANERS: A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaners' agents; linen supply; coin-operated laundries and cleaning; drycleaning plants except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

A review of the DRYCLEANERS list, as provided by EDR, has revealed that there are 2 DRYCLEANERS sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
CORKY'S KITCHEN AND Database: DRYCLEAN SOUTH COAST, Date of Government Version: 03/19/2019	***3811 BEDFORD CANYON***	***WSW 1/8 - 1/4 (0.165 mi.)***	***J34***	***154***
EAGLE DRY CLEANERS Database: DRYCLEANERS, Date of Government Version: 03/01/2019 EPA Id: CAL000289787	3811 BEDFORD CANYON	WSW 1/8 - 1/4 (0.165 mi.)	J35	158

HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there are 2 HIST CORTESE sites within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CORONA TRUCKING	***19885 TEMESCAL CNYN***	***NNE 1/4 - 1/2 (0.260 mi.)***	***K36***	***158***

Reg Id: 083300009T

LISTON ALUMINUM ***20401 TEMESCAL CNYN*** ***ESE 1/4 - 1/2 (0.347 mi.)*** ***L39*** ***170***

Reg Id: 083302340T

MINES: A listing of mine site locations from the Office of Mine Reclamation.

A review of the MINES list, as provided by EDR, and dated 12/10/2018 has revealed that there is 1 MINES site within approximately 0.25 miles of the target property.

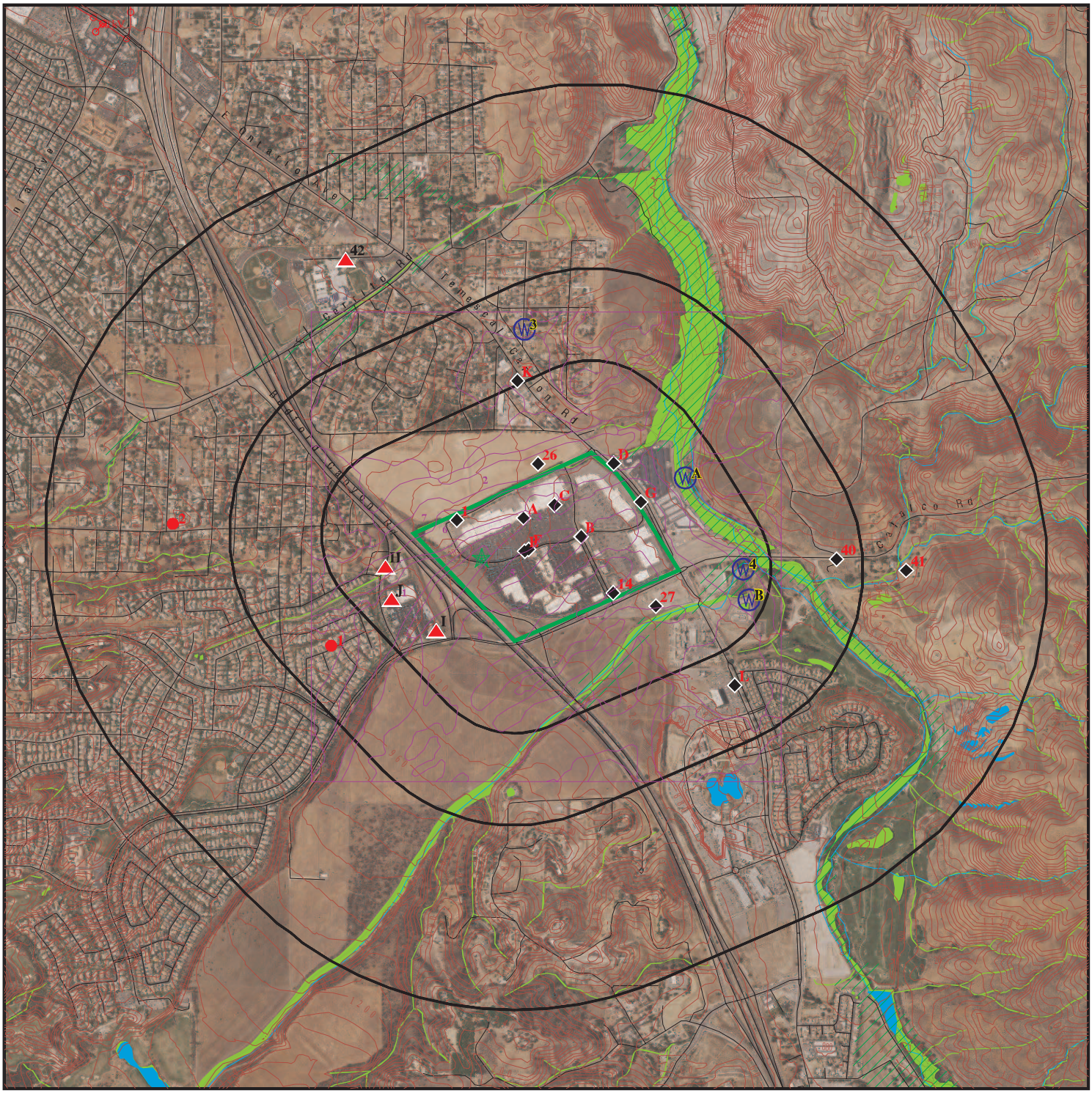
Lower Elevation	Address	Direction / Distance	Map ID	Page
CORONA INDUSTRIAL SA	10000 STOCKDALE HWY,	NNE 0 - 1/8 (0.032 mi.)	26	98

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 6 records.

Site Name	Database(s)
	CDL
	CDL
	CDL
	CDL
	CDL
NWC OF ONTARIO & STATE	CPS-SLIC

OVERVIEW MAP - 05678071.2R



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA

Power transmission lines

100-year flood zone

500-year flood zone

National Wetland Inventory

State Wetlands

Areas of Concern

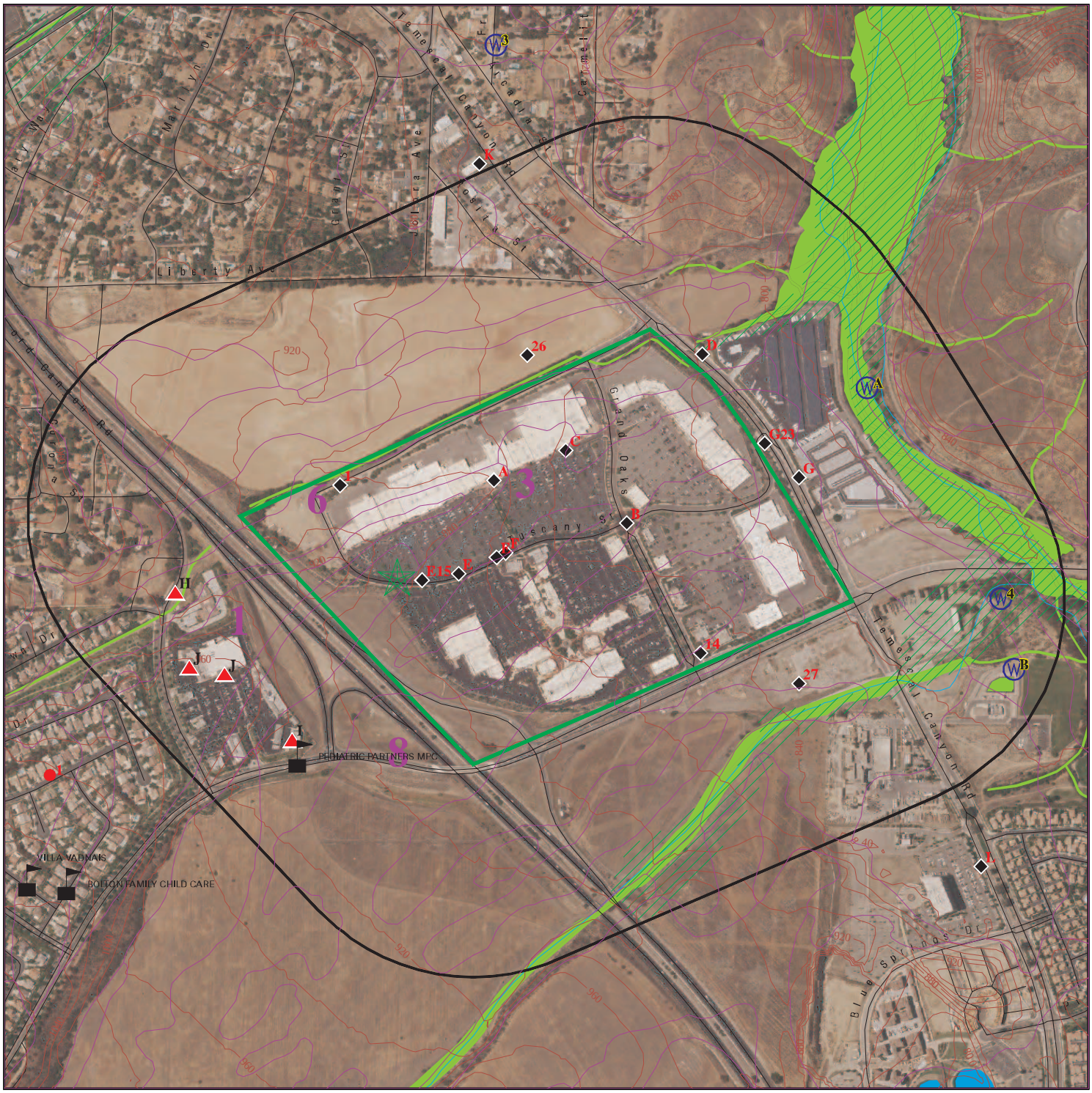
N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Bedford Marketplace - RCTCT Portion	CLIENT:	EBI Consulting
ADDRESS:	Intersections of Eagle Glen Parkway / Cajalco Road Corona CA 92881	CONTACT:	Kim Holland
LAT/LONG:	33.824287 / 117.519598	INQUIRY #:	05678071.2r
		DATE:	June 10, 2019 10:30 am

Copyright © 2019 EDR, Inc. © 2015 TomTom Rel. 2015.

DETAIL MAP - 05678071.2R



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/8 1/4 1/2 Miles

- Indian Reservations BIA
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Bedford Marketplace - RCTCT Portion	CLIENT:	EBI Consulting
ADDRESS:	Intersections of Eagle Glen Parkway / Cajalco Road Corona CA 92881	CONTACT:	Kim Holland
LAT/LONG:	33.824287 / 117.519598	INQUIRY #:	05678071.2r
		DATE:	June 10, 2019 10:35 am

Copyright © 2019 EDR, Inc. © 2015 TomTom Rel. 2015.

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		1	0	0	NR	NR	1
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	1	NR	NR	1
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		1	1	NR	NR	NR	2
RCRA-SQG	0.250		2	0	NR	NR	NR	2
RCRA-CESQG	0.250		1	0	NR	NR	NR	1
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	1	NR	1
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		1	0	1	2	NR	4
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	4	NR	NR	4

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		1	0	1	NR	NR	2
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	1	NR	NR	NR	1
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	1	NR	1
SCH	0.250		0	0	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
CERS HAZ WASTE	0.250		12	2	NR	NR	NR	14
US CDL	TP		NR	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		1	0	NR	NR	NR	1
HIST UST	0.250		2	1	NR	NR	NR	3
CA FID UST	0.250		1	0	NR	NR	NR	1
CERS TANKS	0.250		1	1	NR	NR	NR	2
Local Land Records								
LIENS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
CHMIRS	TP		NR	NR	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0
MCS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		6	0	NR	NR	NR	6
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DRYCLEANERS	0.250		0	2	NR	NR	NR	2
EMI	TP		NR	NR	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
HAZNET	TP		NR	NR	NR	NR	NR	0
ICE	TP		NR	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	2	NR	NR	2
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		1	0	NR	NR	NR	1
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
PEST LIC	TP		NR	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
UIC GEO	TP		NR	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
MILITARY PRIV SITES	TP		NR	NR	NR	NR	NR	0
PROJECT	TP		NR	NR	NR	NR	NR	0
WDR	TP		NR	NR	NR	NR	NR	0
CIWQS	TP		NR	NR	NR	NR	NR	0
CERS	TP		NR	NR	NR	NR	NR	0
NON-CASE INFO	TP		NR	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
OTHER OIL GAS	TP		NR	NR	NR	NR	NR	0
PROD WATER PONDS	TP		NR	NR	NR	NR	NR	0
SAMPLING POINT	TP		NR	NR	NR	NR	NR	0
WELL STIM PROJ	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	31	8	9	4	0	52

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1 **PARTY CITY** **CERS HAZ WASTE** **S123078176**
2415 TUSCANY ST **HAZNET** **N/A**
< 1/8 **CORONA, CA 92881** **CERS**
1 ft.

Relative: Lower

Actual: 882 ft.

CERS HAZ WASTE:

Site ID:	141825
CERS ID:	10459603
CERS Description:	Hazardous Waste Generator

Violations:

Site ID:	141825
Site Name:	Party City
Violation Date:	10-13-2016
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Administration/Documentation - General
Violation Notes:	Returned to compliance on 12/15/2016. 104A ? Post NFPA placard on back exit door. See attached page 2 of 2.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS

Site ID:	141825
Site Name:	Party City
Violation Date:	10-13-2016
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Operations/Maintenance - General
Violation Notes:	Returned to compliance on 12/15/2016. 104B - Post emergency numbers (found in CERS Emergency Response Plan) in conspicuous location. Make sure the font size is large.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS

Site ID:	141825
Site Name:	Party City
Violation Date:	10-13-2016
Citation:	HSC 6.95 25505(a)(4) - California Health and Safety Code, Chapter 6.95, Section(s) 25505(a)(4)
Violation Description:	Failure to provide initial and annual training to all employees in safety procedures in the event of a release or threatened release of a hazardous material or failure to document and maintain training records for a minimum of three years.
Violation Notes:	Returned to compliance on 12/15/2016. Provide refresher training (Hazmat) for employees within 15 days. Document it, send signed sheets(s) to: ab@ggcorp.net
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS

Site ID:	141825
Site Name:	Party City
Violation Date:	10-13-2016
Citation:	19 CCR 6.95 25508(a)(1) - California Code of Regulations, Title 19, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to complete and electronically submit the Business Activities Page and/or Business Owner Operator Identification Page.
Violation Notes:	Returned to compliance on 11/01/2016. See page 2 of 2. Change

PARTY CITY (Continued) **S123078176**

environmental contact person to Karyn Beaty 973-453-8713 email: kbeaty@partycity.com
Violation Division: Corona Fire Department
Violation Program: HMRRP
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 10-13-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 12-15-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Coordinates:
Site ID: 141825
Facility Name: Party City
Env Int Type Code: HMBP
Program ID: 10459603
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 33.824280
Longitude: -117.520060

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Riverside Cnty Env Health
Entity Title: Not reported
Affiliation Address: 4065 County Circle Drive, Room 104
Affiliation City: Riverside
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92503
Affiliation Phone: (951) 358-5055

Affiliation Type Desc: Parent Corporation
Entity Name: Party City
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

PARTY CITY (Continued) **S123078176**

Affiliation Type Desc:	Environmental Contact
Entity Name:	Kimberly Philips
Entity Title:	Not reported
Affiliation Address:	25 Green Pond Road, Suite #1
Affiliation City:	Rockaway
Affiliation State:	NJ
Affiliation Country:	Not reported
Affiliation Zip:	07866
Affiliation Phone:	Not reported

Affiliation Type Desc:	Identification Signer
Entity Name:	Tyreen Torner
Entity Title:	Attorney for Party City Corporation
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Operator
Entity Name:	Party City Corporation
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(973) 983-0888

Affiliation Type Desc:	Document Preparer
Entity Name:	Rosine Marschke
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	2415 Tuscany St
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92881
Affiliation Phone:	Not reported

Affiliation Type Desc:	Legal Owner
Entity Name:	Party City Corporation
Entity Title:	Not reported
Affiliation Address:	25 Green Pond Road, Suite #1
Affiliation City:	Rockaway
Affiliation State:	NJ
Affiliation Country:	United States

PARTY CITY (Continued) **S123078176**

Affiliation Zip: 07866
Affiliation Phone: (973) 983-0888

HAZNET:
Site Name: PARTY CITY CORPORATION #1508
Year: 2017
GEPAID: CAL000417877
Contact: MARGARET CASTILLO
Telephone: 9734538600
Mailing Name: Not reported
Mailing Address: PO BOX 2513
Mailing City,St,Zip: TRUCKEE, CA 961602513
Gen County: Riverside
TSD EPA ID: CAD008252405
TSD County: Los Angeles
Tons: 0.0135
CA Waste Code: 331-Off-specification, aged or surplus organics
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Riverside

CERS TANKS:
Site ID: 141825
CERS ID: 10459603
Site Name: PARTY CITY
CERS Description: Chemical Storage Facilities

Violations:
Site ID: 141825
Site Name: Party City
Violation Date: 10-13-2016
Citation: HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description: Business Plan Program - Administration/Documentation - General
Violation Notes: Returned to compliance on 12/15/2016. 104A ? Post NFPA placard on back exit door. See attached page 2 of 2.
Violation Division: Corona Fire Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 141825
Site Name: Party City
Violation Date: 10-13-2016
Citation: HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description: Business Plan Program - Operations/Maintenance - General
Violation Notes: Returned to compliance on 12/15/2016. 104B - Post emergency numbers (found in CERS Emergency Response Plan) in conspicuous location. Make sure the font size is large.
Violation Division: Corona Fire Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 141825
Site Name: Party City
Violation Date: 10-13-2016

PARTY CITY (Continued) **S123078176**

Citation:	HSC 6.95 25505(a)(4) - California Health and Safety Code, Chapter 6.95, Section(s) 25505(a)(4)
Violation Description:	Failure to provide initial and annual training to all employees in safety procedures in the event of a release or threatened release of a hazardous material or failure to document and maintain training records for a minimum of three years.
Violation Notes:	Returned to compliance on 12/15/2016. Provide refresher training (Hazmat) for employees within 15 days. Document it, send signed sheets(s) to: ab@ggcorp.net
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	141825
Site Name:	Party City
Violation Date:	10-13-2016
Citation:	19 CCR 6.95 25508(a)(1) - California Code of Regulations, Title 19, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to complete and electronically submit the Business Activities Page and/or Business Owner Operator Identification Page.
Violation Notes:	Returned to compliance on 11/01/2016. See page 2 of 2. Change environmental contact person to Karyn Beaty 973-453-8713 email: kbeaty@partycity.com
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	10-13-2016
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Corona Fire Department
Eval Program:	HMRRP
Eval Source:	CERS
Eval General Type:	Other/Unknown
Eval Date:	12-15-2016
Violations Found:	No
Eval Type:	Other, not routine, done by local agency
Eval Notes:	Not reported
Eval Division:	Corona Fire Department
Eval Program:	HMRRP
Eval Source:	CERS

Coordinates:

Site ID:	141825
Facility Name:	Party City
Env Int Type Code:	HMBP
Program ID:	10459603
Coord Name:	Not reported
Ref Point Type Desc:	Center of a facility or station.
Latitude:	33.824280
Longitude:	-117.520060

PARTY CITY (Continued) **S123078176**

Affiliation:

Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055

Affiliation Type Desc:	Parent Corporation
Entity Name:	Party City
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Environmental Contact
Entity Name:	Kimberly Philips
Entity Title:	Not reported
Affiliation Address:	25 Green Pond Road, Suite #1
Affiliation City:	Rockaway
Affiliation State:	NJ
Affiliation Country:	Not reported
Affiliation Zip:	07866
Affiliation Phone:	Not reported

Affiliation Type Desc:	Identification Signer
Entity Name:	Tyreen Torner
Entity Title:	Attorney for Party City Corporation
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Operator
Entity Name:	Party City Corporation
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(973) 983-0888

Affiliation Type Desc:	Document Preparer
Entity Name:	Rosine Marschke
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported

PARTY CITY (Continued) **S123078176**

Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	2415 Tuscany St
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92881
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	Party City Corporation
Entity Title:	Not reported
Affiliation Address:	25 Green Pond Road, Suite #1
Affiliation City:	Rockaway
Affiliation State:	NJ
Affiliation Country:	United States
Affiliation Zip:	07866
Affiliation Phone:	(973) 983-0888

A2 **BED BATH & BEYOND #603** **RCRA NonGen / NLR** **1024829302**
2563 TUSCANY ST **CAL000362369**
< 1/8 **CORONA, CA 92881**
1 ft.

Site 1 of 2 in cluster A

Relative: RCRA NonGen / NLR:
Lower

Date form received by agency:	03/30/2011
Facility name:	BED BATH & BEYOND #603
Facility address:	2563 TUSCANY ST CORONA, CA 92881-4635
EPA ID:	CAL000362369
Mailing address:	5151 SAN FELIPE ST STE 1000 HOUSTON, TX 77056-0000
Contact:	ASHLEY CAMPBELL
Contact address:	5151 SAN FELIPE ST SUITE 1000 HOUSTON, TX 77056
Contact country:	Not reported
Contact telephone:	713-985-5472
Contact email:	ASHLEY.CAMPBELL@STERICYCLE.COM
EPA Region:	09
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Actual:
879 ft.

Owner/Operator Summary:

Owner/operator name:	ASHLEY CAMPBELL
Owner/operator address:	5151 SAN FELIPE ST SUITE 1000 HOUSTON, TX 77056
Owner/operator country:	Not reported
Owner/operator telephone:	713-985-5472
Owner/operator email:	Not reported

BED BATH & BEYOND #603 (Continued) **1024829302**

Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported
Owner/operator name:	BED BATH & BEYOND
Owner/operator address:	650 LIBERTY AVE UNION, NJ 07083
Owner/operator country:	Not reported
Owner/operator telephone:	908-688-0888
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	Yes
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

B3 **STAPLES THE OFFICE SUPERSTORE #1377** **CERS HAZ WASTE** **S123537485**
3439 GRAND OAKS **N/A**
< 1/8 **CORONA, CA 92882**
1 ft.

Site 1 of 5 in cluster B

Relative: CERS HAZ WASTE:
Lower

Site ID:	354935
CERS ID:	10636735
CERS Description:	Hazardous Waste Generator

Actual: Affiliation:
833 ft.

Affiliation Type Desc:	Document Preparer
Entity Name:	Froylan Ruiz Jr
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported

STAPLES THE OFFICE SUPERSTORE #1377 (Continued) **S123537485**

Affiliation Phone:	Not reported
Affiliation Type Desc:	Environmental Contact
Entity Name:	Keith Barrows
Entity Title:	Not reported
Affiliation Address:	500 Staples Drive
Affiliation City:	Framingham
Affiliation State:	MA
Affiliation Country:	Not reported
Affiliation Zip:	01702
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Froylan Ruiz Jr
Entity Title:	Safety and Compliance Manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Parent Corporation
Entity Name:	Staples the Office Superstore East Inc
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055
Affiliation Type Desc:	Legal Owner
Entity Name:	Staples the Office Superstore East Inc
Entity Title:	Not reported
Affiliation Address:	500 Staples Drive
Affiliation City:	Framingham
Affiliation State:	MA
Affiliation Country:	United States
Affiliation Zip:	01702
Affiliation Phone:	(508) 253-5000
Affiliation Type Desc:	Property Owner
Entity Name:	CASTLE & COOKE CORONA CROSSINGS, LLC
Entity Title:	Not reported
Affiliation Address:	10000 STOCKDALE HIGHWAY, SUITE 300
Affiliation City:	BAKERSFIELD

STAPLES THE OFFICE SUPERSTORE #1377 (Continued) **S123537485**

Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	93311
Affiliation Phone:	(661) 664-6540
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	500 Staples Drive
Affiliation City:	Framingham
Affiliation State:	MA
Affiliation Country:	Not reported
Affiliation Zip:	01702
Affiliation Phone:	Not reported
Affiliation Type Desc:	Operator
Entity Name:	Staples the Office Superstore East Inc
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(508) 253-5000

B4 **MICHAELS STORES INC #4712** **RCRA NonGen / NLR** **1024832792**
3469 GRAND OAKS AVE **CAL000371259**
< 1/8 **CORONA, CA 92881**
1 ft.

Site 2 of 5 in cluster B

Relative: **Lower**
Actual: **834 ft.**

RCRA NonGen / NLR:

Date form received by agency:	01/31/2012
Facility name:	MICHAELS STORES INC #4712
Facility address:	3469 GRAND OAKS AVE CORONA, CA 92881
EPA ID:	CAL000371259
Mailing address:	8000 BENT BRANCH DR IRVING, TX 75063-0000
Contact:	RYAN DRAPER
Contact address:	8000 BENT BRANCH DR IRVING, TX 75063
Contact country:	Not reported
Contact telephone:	972-409-5786
Contact email:	DRAPERR@MICHAELS.COM
EPA Region:	09
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	MICHAELS STORES INC
Owner/operator address:	8000 BENT BRANCH DR IRVING, TX 75063
Owner/operator country:	Not reported
Owner/operator telephone:	972-409-5777
Owner/operator email:	Not reported

MICHAELS STORES INC #4712 (Continued) **1024832792**

Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported
Owner/operator name:	RYAN DRAPER
Owner/operator address:	8000 BENT BRANCH DR IRVING, TX 75063
Owner/operator country:	Not reported
Owner/operator telephone:	972-409-5786
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	Yes
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

B5 **MICHAEL'S STORE # 4712** **CERS HAZ WASTE** **S123538098**
3469 GRAND OAKS **N/A**
< 1/8 **CORONA, CA 92881**
1 ft.

Site 3 of 5 in cluster B

Relative: CERS HAZ WASTE:
Lower

Site ID:	48729
CERS ID:	10409656
CERS Description:	Hazardous Waste Generator

Actual: Coordinates:
834 ft.

Site ID:	48729
Facility Name:	Michael's Store # 4712
Env Int Type Code:	HWG
Program ID:	10409656
Coord Name:	Not reported
Ref Point Type Desc:	Center of a facility or station.
Latitude:	33.825680
Longitude:	-117.515070

MICHAEL'S STORE # 4712 (Continued) **S123538098**

Affiliation:

Affiliation Type Desc:	Environmental Contact
Entity Name:	Ryan Draper
Entity Title:	Not reported
Affiliation Address:	8000 Bent Branch Drive
Affiliation City:	Irving
Affiliation State:	TX
Affiliation Country:	Not reported
Affiliation Zip:	75063
Affiliation Phone:	Not reported

Affiliation Type Desc:	Legal Owner
Entity Name:	Michaels Stores, Inc.
Entity Title:	Not reported
Affiliation Address:	8000 Bent Branch Drive
Affiliation City:	Irving
Affiliation State:	TX
Affiliation Country:	United States
Affiliation Zip:	75063
Affiliation Phone:	(972) 409-5786

Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055

Affiliation Type Desc:	Document Preparer
Entity Name:	Chris Ortega
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Parent Corporation
Entity Name:	Michaels Stores, Inc.
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	8000 Bent Branch Drive
Affiliation City:	Irving
Affiliation State:	TX

MICHAEL'S STORE # 4712 (Continued) **S123538098**

Affiliation Country:	Not reported
Affiliation Zip:	75063
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Ryan Draper
Entity Title:	Safety Manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Operator
Entity Name:	Michaels Stores, Inc.
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(972) 409-5786

C6 **TARGET STORE T1548** **RCRA-LQG** **1014465328**
2615 TUSCANY ST **CAR000217893**
< 1/8 **CORONA, CA 92881**
1 ft.

Site 1 of 3 in cluster C

Relative: RCRA-LQG:
Lower

Date form received by agency:	02/01/2018
Facility name:	TARGET STORE T1548
Facility address:	2615 TUSCANY ST CORONA, CA 92881-4631
EPA ID:	CAR000217893
Mailing address:	PO BOX 111 MINNEAPOLIS, MN 55440
Contact:	STEVE MUSSER
Contact address:	PO BOX 111 MINNEAPOLIS, MN 55440
Contact country:	US
Contact telephone:	800-587-2228
Contact email:	POC@TARGET.COM
EPA Region:	09
Classification:	Large Quantity Generator
Description:	Handler: generates 1,000 kg or more of hazardous waste during any calendar month; or generates more than 1 kg of acutely hazardous waste during any calendar month; or generates more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month; or generates 1 kg or less of acutely hazardous waste during any calendar month, and accumulates more than 1 kg of acutely hazardous waste at any time; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates more than

Actual:
838 ft.

TARGET STORE T1548 (Continued) **1014465328**

100 kg of that material at any time

Owner/Operator Summary:

Owner/operator name:	TARGET CORPORATION
Owner/operator address:	PO BOX 111 MINNEAPOLIS, MN 55440
Owner/operator country:	US
Owner/operator telephone:	800-587-2228
Owner/operator email:	POC@TARGET.COM
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	07/23/2003
Owner/Op end date:	Not reported

Owner/operator name:	TARGET CORPORATION
Owner/operator address:	PO BOX 111 MINNEAPOLIS, MN 55440
Owner/operator country:	US
Owner/operator telephone:	800-587-2228
Owner/operator email:	POC@TARGET.COM
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	07/23/2003
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

. Waste code:	121
. Waste name:	Alkaline solution (pH >12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)

. Waste code:	122
. Waste name:	Alkaline solution without metals (pH > 12.5)

. Waste code:	141
. Waste name:	Off-specification, aged, or surplus inorganics

TARGET STORE T1548 (Continued) **1014465328**

. Waste code: 181
. Waste name: Other inorganic solid waste

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 791
. Waste name: Liquids with pH < 2

. Waste code: 792
. Waste name: Liquids with pH < 2 with metals

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D016
. Waste name: 2,4-D (2,4-DICHLOROPHENOXYACETIC ACID)

. Waste code: D018
. Waste name: BENZENE

. Waste code: D024
. Waste name: M-CRESOL

. Waste code: D026
. Waste name: CRESOL

. Waste code: D027
. Waste name: 1,4-DICHLOROBENZENE

TARGET STORE T1548 (Continued) **1014465328**

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D039
. Waste name: TETRACHLOROETHYLENE

. Waste code: P075
. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, & SALTS

. Waste code: U002
. Waste name: 2-PROPANONE (I) (OR) ACETONE (I)

. Waste code: U035
. Waste name: BENZENEBUTANOIC ACID, 4-[BIS(2-CHLOROETHYL)AMINO]- (OR) CHLORAMBUCIL

. Waste code: U154
. Waste name: METHANOL (I) (OR) METHYL ALCOHOL (I)

. Waste code: U188
. Waste name: PHENOL

. Waste code: U279
. Waste name: CARBARYL (OR) 1-NAPHTHALENOL, METHYLCARBAMATE

Historical Generators:
Date form received by agency: 03/01/2014
Site name: TARGET STORE T1548
Classification: Small Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

TARGET STORE T1548 (Continued) **1014465328**

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D016
. Waste name: 2,4-D (2,4-DICHLOROPHENOXYACETIC ACID)

. Waste code: D018
. Waste name: BENZENE

. Waste code: D024
. Waste name: M-CRESOL

. Waste code: D026
. Waste name: CRESOL

. Waste code: D028
. Waste name: 1,2-DICHLOROETHANE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P042
. Waste name: 1,2-BENZENEDIOL, 4-[1-HYDROXY-2-(METHYLAMINO)ETHYL]-, (R)- (OR) EPINEPHRINE

. Waste code: P075
. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, & SALTS

. Waste code: P081
. Waste name: 1,2,3-PROPANETRIOL, TRINITRATE (R) (OR) NITROGLYCERINE (R)

. Waste code: U002
. Waste name: 2-PROPANONE (I) (OR) ACETONE (I)

. Waste code: U034
. Waste name: ACETALDEHYDE, TRICHLORO- (OR) CHLORAL

. Waste code: U035
. Waste name: BENZENEBUTANOIC ACID, 4-[BIS(2-CHLOROETHYL)AMINO]- (OR) CHLORAMBUCIL

. Waste code: U044
. Waste name: CHLOROFORM (OR) METHANE, TRICHLORO-

. Waste code: U058
. Waste name: 2H-1,3,2-OXAZAPHOSPHORIN-2-AMINE, N,N-BIS(2-CHLOROETHYL)TETRAHYDRO-, 2-OXIDE (OR) CYCLOPHOSPHAMIDE

. Waste code: U072

TARGET STORE T1548 (Continued) **1014465328**

. Waste name: BENZENE, 1,4-DICHLORO- (OR) P-DICHLOROBENZENE

. Waste code: U122
. Waste name: FORMALDEHYDE

. Waste code: U129
. Waste name: CYCLOHEXANE, 1,2,3,4,5,6-HEXACHLORO-, (1ALPHA, 2ALPHA, 3BETA, 4ALPHA, 5ALPHA, 6BETA)- (OR) LINDANE

. Waste code: U150
. Waste name: L-PHENYLALANINE, 4-[BIS(2-CHLOROETHYL)AMINO]- (OR) MELPHALAN

. Waste code: U154
. Waste name: METHANOL (I) (OR) METHYL ALCOHOL (I)

. Waste code: U188
. Waste name: PHENOL

. Waste code: U200
. Waste name: RESERPINE (OR) YOHIMBAN-16-CARBOXYLIC ACID, 11,17-DIMETHOXY-18-[(3,4,5-TRIMETHOXYBENZOYL)OXY]-, METHYL ESTER, (3BETA, 16BETA, 17ALPHA, 18BETA, 20ALPHA)-

. Waste code: U201
. Waste name: 1,3-BENZENEDIOL (OR) RESORCINOL

. Waste code: U279
. Waste name: CARBARYL (OR) 1-NAPHTHALENOL, METHYLCARBAMATE

Date form received by agency: 04/11/2011
Site name: TARGET STORE NO 1548
Classification: Small Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D005
. Waste name: BARIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D011
. Waste name: SILVER

. Waste code: D016
. Waste name: 2,4-D (2,4-DICHLOROPHENOXYACETIC ACID)

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, &

TARGET STORE T1548 (Continued) **1014465328**

SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P046
. Waste name: ALPHA,ALPHA-DIMETHYLPHENETHYLAMINE (OR) BENZENEETHANAMINE, ALPHA, ALPHA-DIMETHYL-

. Waste code: P075
. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, & SALTS

Violation Status: No violations found

D7 **CORONA INDUSTRIAL SAND PROJECTS** **RCRA-SQG 1000594421**
20125 TEMESCAL CANYON RD **EMI CAD983582511**
< 1/8 **CORONA, CA 92883** **CERS**
1 ft.

Site 1 of 2 in cluster D

Relative: Lower
Actual: 823 ft.

RCRA-SQG:
Date form received by agency: 05/29/1991
Facility name: CORONA INDUSTRIAL SAND PROJECTS
Facility address: 20125 TEMESCAL CANYON RD
CORONA, CA 92883
EPA ID: CAD983582511
Contact: STAN HENDRICKSON
Contact address: PO BOX 3099
CORONA, CA 91718
Contact country: US
Contact telephone: 714-735-4660
Contact email: Not reported
EPA Region: 09
Classification: Small Small Quantity Generator
Description: Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:
Owner/operator name: CORONA INDUSTRIAL SAND CO
Owner/operator address: PO BOX 3099
CORONA, CA 91718
Owner/operator country: Not reported
Owner/operator telephone: 714-735-4660
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No

CORONA INDUSTRIAL SAND PROJECTS (Continued) **1000594421**

Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

EMI:

Year:	1990
County Code:	33
Air Basin:	SC
Facility ID:	53648
Air District Name:	SC
SIC Code:	1446
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	1
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	16
Part. Matter 10 Micrometers and Smllr Tons/Yr:	8

Year:	1993
County Code:	33
Air Basin:	SC
Facility ID:	53648
Air District Name:	SC
SIC Code:	1446
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	2
NOX - Oxides of Nitrogen Tons/Yr:	8
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	13
Part. Matter 10 Micrometers and Smllr Tons/Yr:	11

Year:	1995
County Code:	33
Air Basin:	SC
Facility ID:	53648
Air District Name:	SC
SIC Code:	1446
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1

CORONA INDUSTRIAL SAND PROJECTS (Continued) **1000594421**

Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	2
NOX - Oxides of Nitrogen Tons/Yr:	8
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	13
Part. Matter 10 Micrometers and Smllr Tons/Yr:	11

Year:	1996
County Code:	33
Air Basin:	SC
Facility ID:	53648
Air District Name:	SC
SIC Code:	1446
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	17
NOX - Oxides of Nitrogen Tons/Yr:	3
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	12
Part. Matter 10 Micrometers and Smllr Tons/Yr:	10

Year:	1997
County Code:	33
Air Basin:	SC
Facility ID:	53648
Air District Name:	SC
SIC Code:	1446
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	2
NOX - Oxides of Nitrogen Tons/Yr:	6
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	8
Part. Matter 10 Micrometers and Smllr Tons/Yr:	1

Year:	1998
County Code:	33
Air Basin:	SC
Facility ID:	53648
Air District Name:	SC
SIC Code:	1446
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	2
NOX - Oxides of Nitrogen Tons/Yr:	6
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	8
Part. Matter 10 Micrometers and Smllr Tons/Yr:	1

CORONA INDUSTRIAL SAND PROJECTS (Continued) **1000594421**

Year:	1999
County Code:	33
Air Basin:	SC
Facility ID:	53648
Air District Name:	SC
SIC Code:	1446
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	2
NOX - Oxides of Nitrogen Tons/Yr:	6
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	8
Part. Matter 10 Micrometers and Smllr Tons/Yr:	1

Year:	2000
County Code:	33
Air Basin:	SC
Facility ID:	53648
Air District Name:	SC
SIC Code:	1446
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	2
NOX - Oxides of Nitrogen Tons/Yr:	6
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	8
Part. Matter 10 Micrometers and Smllr Tons/Yr:	1

Year:	2001
County Code:	33
Air Basin:	SC
Facility ID:	53648
Air District Name:	SC
SIC Code:	1446
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	2
NOX - Oxides of Nitrogen Tons/Yr:	6
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	8
Part. Matter 10 Micrometers and Smllr Tons/Yr:	1

CERS TANKS:

Site ID:	462496
CERS ID:	110040850059
Site Name:	CORONA INDUSTRIAL SAND PROJECT
CERS Description:	US EPA Air Emission Inventory System (EIS)

CORONA INDUSTRIAL SAND PROJECTS (Continued) **1000594421**

Affiliation:
- Affiliation Type Desc: Environmental Contact
- Entity Name: STAN HENDRICKSON
- Entity Title: Not reported
- Affiliation Address: POBOX 3099
- Affiliation City: CORONA
- Affiliation State: CA
- Affiliation Country: Not reported
- Affiliation Zip: Not reported
- Affiliation Phone: Not reported

C8 **CVS PHARMACY #16876** **CERS HAZ WASTE S113137386**
2615 TUSCANY ST STE B **CERS N/A**
< 1/8 **CORONA, CA 92881**
1 ft.

Site 2 of 3 in cluster C

Relative: Lower
Actual: 838 ft.

CERS HAZ WASTE:
- Site ID: 368364
- CERS ID: 10668370
- CERS Description: Hazardous Waste Generator

Violations:
- Site ID: 368364
- Site Name: CVS Pharmacy #16876
- Violation Date: 06-01-2016
- Citation: 22 CCR 12 66262.40(a) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.40(a)
- Violation Description: Failure to keep a copy of each properly signed manifest for at least three years from the date the waste was accepted by the initial transporter. The manifest signed at the time the waste was accepted for transport shall be kept until receiving a signed copy from the designated facility which received the waste.
- Violation Notes: Returned to compliance on 01/25/2017.
- Violation Division: Riverside County Department of Env Health
- Violation Program: HW
- Violation Source: CERS

- Site ID: 368364
- Site Name: CVS Pharmacy #16876
- Violation Date: 06-01-2016
- Citation: 22 CCR 12 66262.23(a) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.23(a)
- Violation Description: Failure to properly complete the Uniform Hazardous Waste Manifest.
- Violation Notes: Returned to compliance on 01/25/2017.
- Violation Division: Riverside County Department of Env Health
- Violation Program: HW
- Violation Source: CERS

- Site ID: 368364
- Site Name: CVS Pharmacy #16876
- Violation Date: 06-01-2016
- Citation: HSC 6.5 25201 - California Health and Safety Code, Chapter 6.5, Section(s) 25201
- Violation Description: Failure to obtain a permit or grant of interim status after generator has accumulated hazardous waste on-site for longer than 90 days.
- Violation Notes: Returned to compliance on 01/25/2017.

CVS PHARMACY #16876 (Continued) **S113137386**

Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-01-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: NEW Generator Inspection at CVS Pharmacy #16876 at 2615 Tuscany St Ste B Corona 92881
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 01-11-2017
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Riverside Cnty Env Health
Entity Title: Not reported
Affiliation Address: 4065 County Circle Drive, Room 104
Affiliation City: Riverside
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92503
Affiliation Phone: (951) 358-5055

Affiliation Type Desc: Legal Owner
Entity Name: Garfield Beach CVS, L.L.C
Entity Title: Not reported
Affiliation Address: One CVS Drive
Affiliation City: Woonsocket
Affiliation State: RI
Affiliation Country: United States
Affiliation Zip: 02895
Affiliation Phone: (401) 765-1500

Affiliation Type Desc: Document Preparer
Entity Name: Tristan Guison, Agent for Garfield Beach CVS, L.L.C.
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Facility Mailing Address

CVS PHARMACY #16876 (Continued) **S113137386**

Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	CVS Health, Attn: Dianne E. Durand, Licensing One CVS Drive ? MC 1160
Affiliation City:	Woonsocket
Affiliation State:	RI
Affiliation Country:	Not reported
Affiliation Zip:	02895
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Tristan Guison, Agent for Garfield Beach CVS, L.L.C.
Entity Title:	Regulatory Compliance Specialist, Verisk 3E
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Environmental Contact
Entity Name:	Verisk 3E, Regulatory Services/CVS
Entity Title:	Not reported
Affiliation Address:	3207 Grey Hawk Ct., Ste. 200
Affiliation City:	Carlsbad
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92010
Affiliation Phone:	Not reported
Affiliation Type Desc:	Parent Corporation
Entity Name:	CVS Health
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Operator
Entity Name:	Garfield Beach CVS, L.L.C
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(401) 765-1500

Site ID:	159758
CERS ID:	10400767
CERS Description:	Hazardous Waste Generator

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	02-05-2016
Violations Found:	No

CVS PHARMACY #16876 (Continued) **S113137386**

Eval Type: Routine done by local agency
Eval Notes: violations written in error, cleared with corporate by phone
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 05-11-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 03-30-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Spoke to Target Corporate, Wade Miller; he shared Target's corporate policy and I agreed to permit their policy. DL
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 06-24-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-15-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Enforcement Action:
Site ID: 159758
Site Name: TARGET T1548
Site Address: 2615 TUSCANY ST
Site City: CORONA
Site Zip: 92881
Enf Action Date: 02-05-2016
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Corona Fire Department
Enf Action Program: UNSPEC
Enf Action Source: CERS

CVS PHARMACY #16876 (Continued) **S113137386**

Site ID: 159758
Site Name: TARGET T1548
Site Address: 2615 TUSCANY ST
Site City: CORONA
Site Zip: 92881
Enf Action Date: 03-30-2016
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Corona Fire Department
Enf Action Program: UNSPEC
Enf Action Source: CERS

Site ID: 159758
Site Name: TARGET T1548
Site Address: 2615 TUSCANY ST
Site City: CORONA
Site Zip: 92881
Enf Action Date: 05-11-2016
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Corona Fire Department
Enf Action Program: UNSPEC
Enf Action Source: CERS

Site ID: 159758
Site Name: TARGET T1548
Site Address: 2615 TUSCANY ST
Site City: CORONA
Site Zip: 92881
Enf Action Date: 06-24-2016
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Corona Fire Department
Enf Action Program: UNSPEC
Enf Action Source: CERS

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Riverside Cnty Env Health
Entity Title: Not reported
Affiliation Address: 4065 County Circle Drive, Room 104
Affiliation City: Riverside
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92503
Affiliation Phone: (951) 358-5055

Affiliation Type Desc: Environmental Contact
Entity Name: Permits, Operations & Compliance
Entity Title: Not reported
Affiliation Address: PO Box 111
Affiliation City: Minneapolis
Affiliation State: MN
Affiliation Country: Not reported

CVS PHARMACY #16876 (Continued) **S113137386**

Affiliation Zip: 55440-0111
Affiliation Phone: Not reported

Affiliation Type Desc: Identification Signer
Entity Name: Steve Musser
Entity Title: Director of Compliance
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: PO Box 111
Affiliation City: Minneapolis
Affiliation State: MN
Affiliation Country: Not reported
Affiliation Zip: 55440-0111
Affiliation Phone: Not reported

Affiliation Type Desc: Operator
Entity Name: Target Corporation
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (800) 587-2228

Affiliation Type Desc: Property Owner
Entity Name: Target Corporation
Entity Title: Not reported
Affiliation Address: PO Box 111
Affiliation City: Minneapolis
Affiliation State: MN
Affiliation Country: United States
Affiliation Zip: 55440-0111
Affiliation Phone: (800) 587-2228

Affiliation Type Desc: Document Preparer
Entity Name: Nathan White
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Legal Owner
Entity Name: Target Corporation
Entity Title: Not reported
Affiliation Address: PO Box 111

CVS PHARMACY #16876 (Continued) **S113137386**

Affiliation City:	Minneapolis
Affiliation State:	MN
Affiliation Country:	United States
Affiliation Zip:	55440-0111
Affiliation Phone:	(800) 587-2228
Affiliation Type Desc:	Parent Corporation
Entity Name:	Target Corporate Office Headquarters
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

CERS TANKS:

Site ID:	159758
CERS ID:	10400767
Site Name:	TARGET T1548
CERS Description:	Chemical Storage Facilities

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	02-05-2016
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	violations written in error, cleared with corporate by phone
Eval Division:	Corona Fire Department
Eval Program:	HMRRP
Eval Source:	CERS
Eval General Type:	Other/Unknown
Eval Date:	05-11-2016
Violations Found:	No
Eval Type:	Other, not routine, done by local agency
Eval Notes:	Not reported
Eval Division:	Corona Fire Department
Eval Program:	HMRRP
Eval Source:	CERS
Eval General Type:	Other/Unknown
Eval Date:	03-30-2016
Violations Found:	No
Eval Type:	Other, not routine, done by local agency
Eval Notes:	Spoke to Target Corporate, Wade Miller; he shared Target's corporate policy and I agreed to permit their policy. DL
Eval Division:	Corona Fire Department
Eval Program:	HMRRP
Eval Source:	CERS
Eval General Type:	Other/Unknown
Eval Date:	06-24-2016
Violations Found:	No
Eval Type:	Other, not routine, done by local agency
Eval Notes:	Not reported

CVS PHARMACY #16876 (Continued) **S113137386**

Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-15-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Enforcement Action:
Site ID: 159758
Site Name: TARGET T1548
Site Address: 2615 TUSCANY ST
Site City: CORONA
Site Zip: 92881
Enf Action Date: 02-05-2016
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Corona Fire Department
Enf Action Program: UNSPEC
Enf Action Source: CERS

Site ID: 159758
Site Name: TARGET T1548
Site Address: 2615 TUSCANY ST
Site City: CORONA
Site Zip: 92881
Enf Action Date: 03-30-2016
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Corona Fire Department
Enf Action Program: UNSPEC
Enf Action Source: CERS

Site ID: 159758
Site Name: TARGET T1548
Site Address: 2615 TUSCANY ST
Site City: CORONA
Site Zip: 92881
Enf Action Date: 05-11-2016
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Corona Fire Department
Enf Action Program: UNSPEC
Enf Action Source: CERS

Site ID: 159758
Site Name: TARGET T1548
Site Address: 2615 TUSCANY ST
Site City: CORONA

CVS PHARMACY #16876 (Continued) **S113137386**

Site Zip: 92881
Enf Action Date: 06-24-2016
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Corona Fire Department
Enf Action Program: UNSPEC
Enf Action Source: CERS

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Riverside Cnty Env Health
Entity Title: Not reported
Affiliation Address: 4065 County Circle Drive, Room 104
Affiliation City: Riverside
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92503
Affiliation Phone: (951) 358-5055

Affiliation Type Desc: Environmental Contact
Entity Name: Permits, Operations & Compliance
Entity Title: Not reported
Affiliation Address: PO Box 111
Affiliation City: Minneapolis
Affiliation State: MN
Affiliation Country: Not reported
Affiliation Zip: 55440-0111
Affiliation Phone: Not reported

Affiliation Type Desc: Identification Signer
Entity Name: Steve Musser
Entity Title: Director of Compliance
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: PO Box 111
Affiliation City: Minneapolis
Affiliation State: MN
Affiliation Country: Not reported
Affiliation Zip: 55440-0111
Affiliation Phone: Not reported

Affiliation Type Desc: Operator
Entity Name: Target Corporation
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported

CVS PHARMACY #16876 (Continued) **S113137386**

Affiliation Zip: Not reported
Affiliation Phone: (800) 587-2228

Affiliation Type Desc: Property Owner
Entity Name: Target Corporation
Entity Title: Not reported
Affiliation Address: PO Box 111
Affiliation City: Minneapolis
Affiliation State: MN
Affiliation Country: United States
Affiliation Zip: 55440-0111
Affiliation Phone: (800) 587-2228

Affiliation Type Desc: Document Preparer
Entity Name: Nathan White
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Legal Owner
Entity Name: Target Corporation
Entity Title: Not reported
Affiliation Address: PO Box 111
Affiliation City: Minneapolis
Affiliation State: MN
Affiliation Country: United States
Affiliation Zip: 55440-0111
Affiliation Phone: (800) 587-2228

Affiliation Type Desc: Parent Corporation
Entity Name: Target Corporate Office Headquarters
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

A9 **BED, BATH AND BEYOND #603** **CERS HAZ WASTE** **S113799358**
2563 TUSCANY ST **HAZNET** **N/A**
< 1/8 **CORONA, CA 92881**
1 ft.

Site 2 of 2 in cluster A

Relative: CERS HAZ WASTE:
Lower Site ID: 11548
Actual: CERS ID: 10169633
879 ft. CERS Description: Hazardous Waste Generator

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-17-2015

BED, BATH AND BEYOND #603 (Continued) **S113799358**

Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Riverside County Department of Env Health
Eval Program:	HW
Eval Source:	CERS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	08-21-2018
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Facility generates retail hazardous wastes. Stericycle is the facility's hazardous waste hauler. All manifests, weekly inspection logs, and training records were available to review on site. No violations were noted at the time of inspection.
Eval Division:	Riverside County Department of Env Health
Eval Program:	HW
Eval Source:	CERS

Coordinates:

Site ID:	11548
Facility Name:	Bed, Bath and Beyond #603
Env Int Type Code:	HWG
Program ID:	10169633
Coord Name:	Not reported
Ref Point Type Desc:	Center of a facility or station.
Latitude:	33.825920
Longitude:	-117.517620

Affiliation:

Affiliation Type Desc:	Identification Signer
Entity Name:	Ashley Campbell
Entity Title:	Authorized Representative
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055
Affiliation Type Desc:	Environmental Contact
Entity Name:	ASHLEY CAMPBELL
Entity Title:	Not reported
Affiliation Address:	5151 San Felipe St, Suite 1000
Affiliation City:	Houston
Affiliation State:	TX

BED, BATH AND BEYOND #603 (Continued) **S113799358**

Affiliation Country:	Not reported
Affiliation Zip:	77056
Affiliation Phone:	Not reported
Affiliation Type Desc:	Operator
Entity Name:	Bed, Bath and Beyond, Inc.
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(908) 688-0888
Affiliation Type Desc:	Document Preparer
Entity Name:	ASHLEY CAMPBELL
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	5151 San Felipe St, Suite 1000
Affiliation City:	Houston
Affiliation State:	TX
Affiliation Country:	Not reported
Affiliation Zip:	77056
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	Bed, Bath and Beyond, Inc.
Entity Title:	Not reported
Affiliation Address:	650 Liberty Ave
Affiliation City:	Union
Affiliation State:	NJ
Affiliation Country:	United States
Affiliation Zip:	07083
Affiliation Phone:	(908) 688-0888
Affiliation Type Desc:	Parent Corporation
Entity Name:	Bed, Bath and Beyond
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

HAZNET:
Site Name: BED BATH & BEYOND #603

BED, BATH AND BEYOND #603 (Continued) **S113799358**

Year: 2017
GEPAID: CAL000362369
Contact: ASHLEY CAMPBELL
Telephone: 7139855472
Mailing Name: Not reported
Mailing Address: 5151 SAN FELIPE ST
Mailing City,St,Zip: HOUSTON, TX 770560000
Gen County: Riverside
TSD EPA ID: CAD008364432
TSD County: Los Angeles
Tons: 0.001
CA Waste Code: 181-Other inorganic solid waste
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Riverside

Site Name: BED BATH & BEYOND #603
Year: 2017
GEPAID: CAL000362369
Contact: ASHLEY CAMPBELL
Telephone: 7139855472
Mailing Name: Not reported
Mailing Address: 5151 SAN FELIPE ST
Mailing City,St,Zip: HOUSTON, TX 770560000
Gen County: Riverside
TSD EPA ID: CAD008364432
TSD County: Los Angeles
Tons: 0.001
CA Waste Code: 122-Alkaline solution without metals pH >= 12.5
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Riverside

Site Name: BED BATH & BEYOND #603
Year: 2017
GEPAID: CAL000362369
Contact: ASHLEY CAMPBELL
Telephone: 7139855472
Mailing Name: Not reported
Mailing Address: 5151 SAN FELIPE ST
Mailing City,St,Zip: HOUSTON, TX 770560000
Gen County: Riverside
TSD EPA ID: CAD008364432
TSD County: Los Angeles
Tons: 0.008
CA Waste Code: 331-Off-specification, aged or surplus organics
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Riverside

Site Name: BED BATH & BEYOND #603
Year: 2017
GEPAID: CAL000362369
Contact: ASHLEY CAMPBELL
Telephone: 7139855472
Mailing Name: Not reported
Mailing Address: 5151 SAN FELIPE ST

BED, BATH AND BEYOND #603 (Continued) **S113799358**

Mailing City,St,Zip:	HOUSTON, TX 770560000
Gen County:	Riverside
TSD EPA ID:	CAD008364432
TSD County:	Los Angeles
Tons:	0.003
CA Waste Code:	214-Unspecified solvent mixture
Method:	H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	Riverside
Site Name:	BED BATH & BEYOND #603
Year:	2017
GEPAID:	CAL000362369
Contact:	ASHLEY CAMPBELL
Telephone:	7139855472
Mailing Name:	Not reported
Mailing Address:	5151 SAN FELIPE ST
Mailing City,St,Zip:	HOUSTON, TX 770560000
Gen County:	Riverside
TSD EPA ID:	CAD008364432
TSD County:	Los Angeles
Tons:	0.0155
CA Waste Code:	-
Method:	H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	Riverside

Click this hyperlink while viewing on your computer to access
23 additional CA_HAZNET: record(s) in the EDR Site Report.

C10 **CVS PHARMACY #16826** **RCRA-CESQG 1018273685**
2615 TUSCANNY ST STE B **FINDS CAR000258582**
< 1/8 **CORONA, CA 92881** **ECHO**
1 ft.

Site 3 of 3 in cluster C

Relative: Lower
Actual: 838 ft.

RCRA-CESQG:

Date form received by agency:	02/16/2016
Facility name:	CVS PHARMACY #16826
Facility address:	2615 TUSCANNY ST STE B CORONA, CA 92881
EPA ID:	CAR000258582
Mailing address:	ONE CVS DR WOONSOCKET, RI 02895
Contact:	NICOLE WILKINSON
Contact address:	ONE CVS DR MAIL CODE 2340 WOONSOCKET, RI 02895
Contact country:	US
Contact telephone:	401-770-7132
Contact email:	NICOLE.WILKINSON@CVSHEALTH.COM
EPA Region:	09
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any

CVS PHARMACY #16826 (Continued) **1018273685**

land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	TARGET CORP
Owner/operator address:	NICOLLET MALL MINNEAPOLIS, MN 55403
Owner/operator country:	US
Owner/operator telephone:	612-304-6073
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	07/23/2003
Owner/Op end date:	Not reported

Owner/operator name:	GARFIELD BEACH CVS LLC
Owner/operator address:	Not reported Not reported
Owner/operator country:	US
Owner/operator telephone:	Not reported
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	12/16/2015
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

. Waste code:	122
. Waste name:	Alkaline solution without metals (pH > 12.5)

CVS PHARMACY #16826 (Continued) **1018273685**

. Waste code: 123
. Waste name: Unspecified alkaline solution

. Waste code: 134
. Waste name: Aqueous solution with <10% total organic residues

. Waste code: 141
. Waste name: Off-specification, aged, or surplus inorganics

. Waste code: 161
. Waste name: Fluid-cracking catalyst (FCC) waste

. Waste code: 214
. Waste name: Unspecified solvent mixture

. Waste code: 311
. Waste name: Pharmaceutical waste

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 352
. Waste name: Other organic solids

. Waste code: 541
. Waste name: Photochemicals / photo processing waste

. Waste code: 561
. Waste name: Detergent and soap

. Waste code: 791
. Waste name: Liquids with pH < 2

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D024
. Waste name: M-CRESOL

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, &

CVS PHARMACY #16826 (Continued) **1018273685**

SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: U034
. Waste name: ACETALDEHYDE, TRICHLORO- (OR) CHLORAL

. Waste code: U044
. Waste name: CHLOROFORM (OR) METHANE, TRICHLORO-

. Waste code: U122
. Waste name: FORMALDEHYDE

. Waste code: U129
. Waste name: CYCLOHEXANE, 1,2,3,4,5,6-HEXACHLORO-, (1ALPHA, 2ALPHA, 3BETA, 4ALPHA, 5ALPHA, 6BETA)- (OR) LINDANE

. Waste code: U188
. Waste name: PHENOL

. Waste code: U201
. Waste name: 1,3-BENZENEDIOL (OR) RESORCINOL

. Waste code: U205
. Waste name: SELENIUM SULFIDE (OR) SELENIUM SULFIDE SES2 (R,T)

Violation Status: No violations found

FINDS:

Registry ID: 110067552561

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1018273685
Registry ID: 110067552561
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110067552561

E11 **KOHL'S DEPARTMENT STORES - STORE #592** **CERS HAZ WASTE** **S123507785**
2489 TUSCANY ST **CERS** **N/A**
< 1/8 **CORONA, CA 92881**
1 ft.

Site 1 of 5 in cluster E

Relative: CERS HAZ WASTE:
Lower
Site ID: 275914
Actual: CERS ID: 10629610
870 ft. CERS Description: Hazardous Waste Generator

KOHL'S DEPARTMENT STORES - STORE #592 (Continued) **S123507785**

Violations:

Site ID:	275914
Site Name:	Kohl's Department Stores - Store #592
Violation Date:	02-09-2016
Citation:	22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description:	Failure to properly label hazardous waste accumulation containers with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.
Violation Notes:	Returned to compliance on 03/27/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS

Site ID:	275914
Site Name:	Kohl's Department Stores - Store #592
Violation Date:	02-09-2016
Citation:	40 CFR 1 262.34(d)(5)(iii) - U.S. Code of Federal Regulations, Title 40, Chapter 1, Section(s) 262.34(d)(5)(iii)
Violation Description:	Failure to ensure employees are familiar with the handling and compliance of hazardous waste regulations and emergency response.
Violation Notes:	Returned to compliance on 03/27/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS

Evaluation:

Eval General Type:	Other/Unknown
Eval Date:	03-24-2016
Violations Found:	No
Eval Type:	Other, not routine, done by local agency
Eval Notes:	Not reported
Eval Division:	Riverside County Department of Env Health
Eval Program:	HW
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	02-09-2016
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Riverside County Department of Env Health
Eval Program:	HW
Eval Source:	CERS

Enforcement Action:

Site ID:	275914
Site Name:	Kohl's Department Stores - Store #592
Site Address:	2489 TUSCANY ST
Site City:	CORONA
Site Zip:	92881
Enf Action Date:	02-09-2016
Enf Action Type:	Notice of Violation (Unified Program)
Enf Action Description:	Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:	Not reported

KOHL'S DEPARTMENT STORES - STORE #592 (Continued) **S123507785**

Enf Action Division: Riverside County Department of Env Health
Enf Action Program: HW
Enf Action Source: CERS

Coordinates:
Site ID: 275914
Facility Name: Kohl's Department Stores - Store #592
Env Int Type Code: HWG
Program ID: 10629610
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 33.825280
Longitude: -117.518680

Affiliation:
Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: P.O. Box 3155
Affiliation City: Milwaukee
Affiliation State: WI
Affiliation Country: Not reported
Affiliation Zip: 53201
Affiliation Phone: Not reported

Affiliation Type Desc: Parent Corporation
Entity Name: Kohl's Department Stores
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Document Preparer
Entity Name: Ryan Piedot
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Environmental Contact
Entity Name: Ryan Piedot
Entity Title: Not reported
Affiliation Address: P.O. Box 3155
Affiliation City: Milwaukee
Affiliation State: WI
Affiliation Country: Not reported
Affiliation Zip: 53201
Affiliation Phone: Not reported

Affiliation Type Desc: CUPA District

KOHL'S DEPARTMENT STORES - STORE #592 (Continued) **S123507785**

Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055
Affiliation Type Desc:	Identification Signer
Entity Name:	Ryan Piedot
Entity Title:	Manager of Environmental Compliance
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	Kohl?s Department Stores
Entity Title:	Not reported
Affiliation Address:	P.O. Box 3155
Affiliation City:	Milwaukee
Affiliation State:	WI
Affiliation Country:	United States
Affiliation Zip:	53201
Affiliation Phone:	(262) 703-7019
Affiliation Type Desc:	Operator
Entity Name:	Kohl's Department Stores - Store #592
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(262) 703-7019

CERS TANKS:

Site ID:	275914
CERS ID:	10629610
Site Name:	KOHL'S DEPARTMENT STORES - STORE #592
CERS Description:	Chemical Storage Facilities

Violations:

Site ID:	275914
Site Name:	Kohl's Department Stores - Store #592
Violation Date:	02-09-2016
Citation:	22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description:	Failure to properly label hazardous waste accumulation containers with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.
Violation Notes:	Returned to compliance on 03/27/2016.

KOHL'S DEPARTMENT STORES - STORE #592 (Continued) **S123507785**

Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Site ID: 275914
Site Name: Kohl's Department Stores - Store #592
Violation Date: 02-09-2016
Citation: 40 CFR 1 262.34(d)(5)(iii) - U.S. Code of Federal Regulations, Title 40, Chapter 1, Section(s) 262.34(d)(5)(iii)
Violation Description: Failure to ensure employees are familiar with the handling and compliance of hazardous waste regulations and emergency response.
Violation Notes: Returned to compliance on 03/27/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Evaluation:
Eval General Type: Other/Unknown
Eval Date: 03-24-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 02-09-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Enforcement Action:
Site ID: 275914
Site Name: Kohl's Department Stores - Store #592
Site Address: 2489 TUSCANY ST
Site City: CORONA
Site Zip: 92881
Enf Action Date: 02-09-2016
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Riverside County Department of Env Health
Enf Action Program: HW
Enf Action Source: CERS

Coordinates:
Site ID: 275914
Facility Name: Kohl's Department Stores - Store #592
Env Int Type Code: HWG
Program ID: 10629610
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.

KOHL'S DEPARTMENT STORES - STORE #592 (Continued) **S123507785**

Latitude: 33.825280
Longitude: -117.518680

Affiliation:
Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: P.O. Box 3155
Affiliation City: Milwaukee
Affiliation State: WI
Affiliation Country: Not reported
Affiliation Zip: 53201
Affiliation Phone: Not reported

Affiliation Type Desc: Parent Corporation
Entity Name: Kohl's Department Stores
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Document Preparer
Entity Name: Ryan Piedot
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Environmental Contact
Entity Name: Ryan Piedot
Entity Title: Not reported
Affiliation Address: P.O. Box 3155
Affiliation City: Milwaukee
Affiliation State: WI
Affiliation Country: Not reported
Affiliation Zip: 53201
Affiliation Phone: Not reported

Affiliation Type Desc: CUPA District
Entity Name: Riverside Cnty Env Health
Entity Title: Not reported
Affiliation Address: 4065 County Circle Drive, Room 104
Affiliation City: Riverside
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92503
Affiliation Phone: (951) 358-5055

Affiliation Type Desc: Identification Signer
Entity Name: Ryan Piedot
Entity Title: Manager of Environmental Compliance

KOHL'S DEPARTMENT STORES - STORE #592 (Continued) **S123507785**

Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	Kohl?s Department Stores
Entity Title:	Not reported
Affiliation Address:	P.O. Box 3155
Affiliation City:	Milwaukee
Affiliation State:	WI
Affiliation Country:	United States
Affiliation Zip:	53201
Affiliation Phone:	(262) 703-7019
Affiliation Type Desc:	Operator
Entity Name:	Kohl's Department Stores - Store #592
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(262) 703-7019

E12 **ROSS DRESS FOR LESS #0757** **RCRA NonGen / NLR** **1024844866**
2519 TUSCANY ST **CAL000397553**
< 1/8 **CORONA, CA 92881**
1 ft.

Site 2 of 5 in cluster E

Relative: **Lower**
Actual: **857 ft.**

RCRA NonGen / NLR:

Date form received by agency:	06/06/2014
Facility name:	ROSS DRESS FOR LESS #0757
Facility address:	2519 TUSCANY ST CORONA, CA 92881-4635
EPA ID:	CAL000397553
Mailing address:	5151 SAN FELIPE ST STE 1000 HOUSTON, TX 77056
Contact:	KATHY HATCH
Contact address:	5130 HACIENDA DR 3RD FLOOR DUBLIN, CA 94568
Contact country:	Not reported
Contact telephone:	925-965-4015
Contact email:	ERIC.GUARD@ROS.COM
EPA Region:	09
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	KATHY HATCH
Owner/operator address:	5130 HACIENDA DR 3RD FLOOR DUBLIN, CA 94568
Owner/operator country:	Not reported

ROSS DRESS FOR LESS #0757 (Continued) **1024844866**

Owner/operator telephone:	925-965-4015
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported
Owner/operator name:	ROSS DRESS FOR LESS INC
Owner/operator address:	5130 HACIENDA DR DUBLIN, CA 94568
Owner/operator country:	Not reported
Owner/operator telephone:	925-965-4831
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	Yes
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

E13 **BEST BUY #0847** **CERS HAZ WASTE** **S117304023**
2430 TUSCANY ST **N/A**
< 1/8 **CORONA, CA 92881**
1 ft.

Site 3 of 5 in cluster E

Relative: Lower
Actual: 866 ft.

CERS HAZ WASTE:

Site ID:	420799
CERS ID:	10732219
CERS Description:	Hazardous Waste Generator

Coordinates:

Site ID:	420799
Facility Name:	Best Buy #0847
Env Int Type Code:	HWG
Program ID:	10732219
Coord Name:	Not reported
Ref Point Type Desc:	Center of a facility or station.

BEST BUY #0847 (Continued) **S117304023**

Latitude: 33.824150
Longitude: -117.519790

Affiliation:
Affiliation Type Desc: Document Preparer
Entity Name: Aptim Environmental & Infrastructure
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Environmental Contact
Entity Name: Tim Dunn
Entity Title: Not reported
Affiliation Address: 7601 Penn Avenue South
Affiliation City: Richfield
Affiliation State: MN
Affiliation Country: Not reported
Affiliation Zip: 55423
Affiliation Phone: Not reported

Affiliation Type Desc: Operator
Entity Name: Best Buy #0847
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (951) 817-9983

Affiliation Type Desc: Parent Corporation
Entity Name: Best Buy Co., Inc.
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Identification Signer
Entity Name: Tim Dunn
Entity Title: Compliance Director
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: CUPA District
Entity Name: Riverside Cnty Env Health
Entity Title: Not reported

BEST BUY #0847 (Continued) **S117304023**

Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	7601 Penn Avenue South
Affiliation City:	Richfield
Affiliation State:	MN
Affiliation Country:	Not reported
Affiliation Zip:	55423
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	Best Buy Co, Inc.
Entity Title:	Not reported
Affiliation Address:	7601 Penn Avenue South
Affiliation City:	Richfield
Affiliation State:	MN
Affiliation Country:	United States
Affiliation Zip:	55423-3645
Affiliation Phone:	(612) 291-3406
Affiliation Type Desc:	Property Owner
Entity Name:	Castle & Cooke Corona Crossings I, Inc.
Entity Title:	Not reported
Affiliation Address:	10000 Stockdale Highway
Affiliation City:	Bakersfield
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	Not reported
Affiliation Phone:	(661) 664-6500

---

14 **TOYS"R" US #6622** **CERS HAZ WASTE** **S123537530**
3665 GRAND OAKS **N/A**
< 1/8 **CORONA, CA 92881**
1 ft.

Relative:
Lower

Actual:
843 ft.

CERS HAZ WASTE:

Site ID:	366424
CERS ID:	10663708
CERS Description:	Hazardous Waste Generator

Coordinates:

Site ID:	366424
Facility Name:	Toys"R" Us #6622
Env Int Type Code:	HWG
Program ID:	10663708
Coord Name:	Not reported
Ref Point Type Desc:	Center of a facility or station.
Latitude:	33.823200
Longitude:	-117.513720

TOYS"R" US #6622 (Continued) **S123537530**

Affiliation:

Affiliation Type Desc:	Environmental Contact
Entity Name:	Zorinah Bridges
Entity Title:	Not reported
Affiliation Address:	1 Geoffrey Way
Affiliation City:	Wayne
Affiliation State:	NJ
Affiliation Country:	Not reported
Affiliation Zip:	07470
Affiliation Phone:	Not reported

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	3665 Grand Oaks
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92881
Affiliation Phone:	Not reported

Affiliation Type Desc:	Identification Signer
Entity Name:	Gregory Parks
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Operator
Entity Name:	Toys "R" Us-Delaware, Inc.
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(973) 617-3500

Affiliation Type Desc:	Parent Corporation
Entity Name:	Toys "R" Us-Delaware, Inc.
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Property Owner
Entity Name:	Toys "R" Us-Delaware, Inc.
Entity Title:	Not reported
Affiliation Address:	1 Geoffrey Way
Affiliation City:	Wayne
Affiliation State:	CA

TOYS"R" US #6622 (Continued) **S123537530**

Affiliation Country:	United States
Affiliation Zip:	07470
Affiliation Phone:	(973) 617-3500
Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055
Affiliation Type Desc:	Document Preparer
Entity Name:	Gregory Parks
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	Toys "R" Us-Delaware, Inc.
Entity Title:	Not reported
Affiliation Address:	1 Geoffrey Way
Affiliation City:	Wayne
Affiliation State:	NJ
Affiliation Country:	United States
Affiliation Zip:	07470
Affiliation Phone:	(973) 617-3500

E15 **MARSHALLS 0605** **CERS HAZ WASTE** **S117311131**
2459 TUSCANY ST **CERS** **N/A**
< 1/8 **CORONA, CA 92881**
1 ft.

Site 4 of 5 in cluster E

Relative: CERS HAZ WASTE:
Lower

Site ID:	133121
CERS ID:	10489042
CERS Description:	Hazardous Waste Generator

Actual: Evaluation:
878 ft.

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	07-22-2015
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Riverside County Department of Env Health
Eval Program:	HW
Eval Source:	CERS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	08-21-2018

MARSHALLS 0605 (Continued) **S117311131**

Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Facility generates retail hazardous wastes. All manifests were available to review. No violations were noted.
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Coordinates:
Site ID: 133121
Facility Name: Marshalls 0605
Env Int Type Code: HWG
Program ID: 10489042
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 33.824200
Longitude: -117.519270

Affiliation:
Affiliation Type Desc: Document Preparer
Entity Name: Susan Allen
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: CUPA District
Entity Name: Riverside Cnty Env Health
Entity Title: Not reported
Affiliation Address: 4065 County Circle Drive, Room 104
Affiliation City: Riverside
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92503
Affiliation Phone: (951) 358-5055

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: 770 Cochituate Road
Affiliation City: Framingham
Affiliation State: MA
Affiliation Country: Not reported
Affiliation Zip: 01701
Affiliation Phone: Not reported

Affiliation Type Desc: Legal Owner
Entity Name: Marshalls of CA, LLC
Entity Title: Not reported
Affiliation Address: 770 Cochituate Road
Affiliation City: Framingham
Affiliation State: MA
Affiliation Country: United States

MARSHALLS 0605 (Continued) **S117311131**

Affiliation Zip: 01701
Affiliation Phone: (774) 308-3651

Affiliation Type Desc: Identification Signer
Entity Name: Paul Kangas
Entity Title: SVP, Chief Compliance Officer
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Parent Corporation
Entity Name: The TJX Companies, Inc.
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Environmental Contact
Entity Name: Paul Kangas
Entity Title: Not reported
Affiliation Address: 770 Cochituate Road 300.1AN
Affiliation City: Framingham
Affiliation State: MA
Affiliation Country: Not reported
Affiliation Zip: 01701
Affiliation Phone: Not reported

Affiliation Type Desc: Operator
Entity Name: Marshalls
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (774) 308-3651

CERS TANKS:
Site ID: 133121
CERS ID: 10489042
Site Name: MARSHALLS 0605
CERS Description: Chemical Storage Facilities

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-22-2015
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health

MARSHALLS 0605 (Continued) **S117311131**

Eval Program:	HW
Eval Source:	CERS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	08-21-2018
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Facility generates retail hazardous wastes. All manifests were available to review. No violations were noted.
Eval Division:	Riverside County Department of Env Health
Eval Program:	HW
Eval Source:	CERS

Coordinates:

Site ID:	133121
Facility Name:	Marshalls 0605
Env Int Type Code:	HWG
Program ID:	10489042
Coord Name:	Not reported
Ref Point Type Desc:	Center of a facility or station.
Latitude:	33.824200
Longitude:	-117.519270

Affiliation:

Affiliation Type Desc:	Document Preparer
Entity Name:	Susan Allen
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	770 Cochituate Road
Affiliation City:	Framingham
Affiliation State:	MA
Affiliation Country:	Not reported
Affiliation Zip:	01701
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	Marshalls of CA, LLC

MARSHALLS 0605 (Continued) **S117311131**

Entity Title:	Not reported
Affiliation Address:	770 Cochituate Road
Affiliation City:	Framingham
Affiliation State:	MA
Affiliation Country:	United States
Affiliation Zip:	01701
Affiliation Phone:	(774) 308-3651
Affiliation Type Desc:	Identification Signer
Entity Name:	Paul Kangas
Entity Title:	SVP, Chief Compliance Officer
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Parent Corporation
Entity Name:	The TJX Companies, Inc.
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Environmental Contact
Entity Name:	Paul Kangas
Entity Title:	Not reported
Affiliation Address:	770 Cochituate Road 300.1AN
Affiliation City:	Framingham
Affiliation State:	MA
Affiliation Country:	Not reported
Affiliation Zip:	01701
Affiliation Phone:	Not reported
Affiliation Type Desc:	Operator
Entity Name:	Marshalls
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(774) 308-3651

B16 **PETCO STORE #1127** **RCRA NonGen / NLR** **1024839947**
3485 GRAND OAKS **CAL000388251**
< 1/8 **CORONA, CA 92881**
1 ft.

Site 4 of 5 in cluster B

Relative:
Lower

Actual:
834 ft.

RCRA NonGen / NLR:

Date form received by agency:	08/05/2013
Facility name:	PETCO STORE #1127
Facility address:	3485 GRAND OAKS CORONA, CA 92881
EPA ID:	CAL000388251
Mailing address:	654 RICHLAND HILLS SAN ANTONIO, TX 78245
Contact:	AMY EBERSOLE-MARTINEZ
Contact address:	654 RICHLAND HILLS SAN ANTONIO, TX 78245-0000
Contact country:	Not reported
Contact telephone:	858-761-5359
Contact email:	SAFETY@PETCO.COM
EPA Region:	09
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	AMY EBERSOLE-MARTINEZ
Owner/operator address:	654 RICHLAND HILLS SAN ANTONIO, TX 78245
Owner/operator country:	Not reported
Owner/operator telephone:	858-761-5359
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	PETCO ANIMALS SUPPLIES INC
Owner/operator address:	654 RICHLAND HILLS SAN ANTONIO, TX 78245
Owner/operator country:	Not reported
Owner/operator telephone:	858-201-9217
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	Yes
Treater, storer or disposer of HW:	No
Underground injection activity:	No

PETCO STORE #1127 (Continued) **1024839947**

On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

B17 **PETCO #1127** **CERS HAZ WASTE** **S123536976**
3485 GRAND OAKS **N/A**
< 1/8 **CORONA, CA 92881**
1 ft.

Site 5 of 5 in cluster B

Relative: **Lower**
Actual: **834 ft.**

CERS HAZ WASTE:

Site ID:	142653
CERS ID:	10559458
CERS Description:	Hazardous Waste Generator

Violations:

Site ID:	142653
Site Name:	Petco #1127
Violation Date:	08-06-2014
Citation:	HSC 6.11 25404.1 - California Health and Safety Code, Chapter 6.11, Section(s) 25404.1
Violation Description:	Failure to obtain and/or maintain an active hazardous waste generator permit.
Violation Notes:	Returned to compliance on 07/05/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	08-06-2014
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	Petco #1127 3485 Grand Oaks, Corona CA 92881. generator inpsection.
Eval Division:	Riverside County Department of Env Health
Eval Program:	HW
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	11-15-2017
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Riverside County Department of Env Health
Eval Program:	HW
Eval Source:	CERS

Enforcement Action:

Site ID:	142653
Site Name:	Petco #1127

PETCO #1127 (Continued) **S123536976**

Site Address:	3485 GRAND OAKS
Site City:	CORONA
Site Zip:	92881
Enf Action Date:	08-06-2014
Enf Action Type:	Notice of Violation (Unified Program)
Enf Action Description:	Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:	Not reported
Enf Action Division:	Riverside County Department of Env Health
Enf Action Program:	HW
Enf Action Source:	CERS

Coordinates:

Site ID:	142653
Facility Name:	Petco #1127
Env Int Type Code:	HWG
Program ID:	10559458
Coord Name:	Not reported
Ref Point Type Desc:	Center of a facility or station.
Latitude:	33.825480
Longitude:	-117.514990

Affiliation:

Affiliation Type Desc:	Document Preparer
Entity Name:	Aptim Environmental and Infrastructure, Inc.
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Operator
Entity Name:	Petco #1127
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(210) 201-9217

Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	654 Richland Hills Drive

PETCO #1127 (Continued) **S123536976**

Affiliation City:	San Antonio
Affiliation State:	TX
Affiliation Country:	Not reported
Affiliation Zip:	78245
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	Petco Animal Supplies, Inc.
Entity Title:	Not reported
Affiliation Address:	654 Richland Hills Drive
Affiliation City:	San Antonio
Affiliation State:	TX
Affiliation Country:	United States
Affiliation Zip:	78245
Affiliation Phone:	(210) 201-9217
Affiliation Type Desc:	Parent Corporation
Entity Name:	Petco Animal Supplies, Inc.
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Environmental Contact
Entity Name:	Amy Ebersole Martinez, Manager, Safety & Environment
Entity Title:	Not reported
Affiliation Address:	654 Richland Hills Drive
Affiliation City:	San Antonio
Affiliation State:	TX
Affiliation Country:	Not reported
Affiliation Zip:	78245
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Amy Ebersole-Martinez
Entity Title:	Safety and Environmental Manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

F18 **ULTA BEAUTY 212** **RCRA NonGen / NLR** **1024840257**
2541 TUSCANY ST **CAL000388863**
< 1/8 **CORONA, CA 92881**
1 ft.

Site 1 of 2 in cluster F

Relative: RCRA NonGen / NLR:
Lower
Date form received by agency: 08/23/2013
Actual: Facility name: ULTA BEAUTY 212
854 ft. Facility address: 2541 TUSCANY ST
CORONA, CA 92881

ULTA BEAUTY 212 (Continued) **1024840257**

EPA ID: CAL000388863
Mailing address: 1000 REMINGTON BLVD, SUITE 120
ATTN: JEREMY HOJNICKI - OPERATIONS
BOLINGBROOK, IL 60440
Contact: JEREMY HOJNICKI
Contact address: 1000 REMINGTON BLVD STE 120
BOLINGBROOK, IL 60440
Contact country: Not reported
Contact telephone: 630-296-1552
Contact email: JHOJNICKI@ULTA.COM
EPA Region: 09
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: ULTA SALON COSMETICS & FRAGRANCE IN
Owner/operator address: 1000 REMINGTON BLVD SUITE 120
BOLINGBROOK, IL 60440
Owner/operator country: Not reported
Owner/operator telephone: 630-410-4800
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Other
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: JEREMY HOJNICKI
Owner/operator address: 1000 REMINGTON BLVD STE 120
BOLINGBROOK, IL 60440
Owner/operator country: Not reported
Owner/operator telephone: 630-296-1552
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Other
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: Yes
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No

ULTA BEAUTY 212 (Continued) **1024840257**

Used oil transporter: No

Violation Status: No violations found

E19 **ROSS DRESS FOR LESS #0757** **CERS HAZ WASTE** **S118937731**
2519 TUSCANY ST **HAZNET** **N/A**
< 1/8 **CORONA, CA 92881** **CERS**
1 ft.

Site 5 of 5 in cluster E

Relative: Lower
Actual: 857 ft.

CERS HAZ WASTE:
Site ID: 149106
CERS ID: 10509112
CERS Description: Hazardous Waste Generator

Violations:
Site ID: 149106
Site Name: Ross Dress For Less #0757
Violation Date: 11-06-2014
Citation: HSC 6.5 25186.2 - California Health and Safety Code, Chapter 6.5, Section(s) 25186.2
Violation Description: Failure to properly handle, store, or treat hazardous waste or provided false information submitted on the permit application and other documents.
Violation Notes: Returned to compliance on 07/19/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Site ID: 149106
Site Name: Ross Dress For Less #0757
Violation Date: 11-06-2014
Citation: HSC 6.5 25189.5(a) - California Health and Safety Code, Chapter 6.5, Section(s) 25189.5(a)
Violation Description: Failure to properly dispose of hazardous waste at an authorized location.
Violation Notes: Returned to compliance on 07/19/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Site ID: 149106
Site Name: Ross Dress For Less #0757
Violation Date: 11-06-2014
Citation: HSC 6.11 25404.1 - California Health and Safety Code, Chapter 6.11, Section(s) 25404.1
Violation Description: Failure to obtain and/or maintain an active hazardous waste generator permit.
Violation Notes: Returned to compliance on 07/19/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Site ID: 149106
Site Name: Ross Dress For Less #0757
Violation Date: 11-06-2014
Citation: 40 CFR 1 265.174 - U.S. Code of Federal Regulations, Title 40, Chapter 1, Section(s) 265.174
Violation Description: Failure to inspect hazardous waste storage areas at least weekly.

ROSS DRESS FOR LESS #0757 (Continued) **S118937731**

Violation Notes: Returned to compliance on 09/28/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 01-09-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 07-19-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: RTC- Not all Violations corrected.
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 09-28-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: RTC- violations corrected.
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 11-06-2014
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Enforcement Action:
Site ID: 149106
Site Name: Ross Dress For Less #0757
Site Address: 2519 TUSCANY ST
Site City: CORONA
Site Zip: 92881
Enf Action Date: 11-06-2014
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Riverside County Department of Env Health
Enf Action Program: HW
Enf Action Source: CERS

ROSS DRESS FOR LESS #0757 (Continued) **S118937731**

Coordinates:

Site ID:	149106
Facility Name:	Ross Dress For Less #0757
Env Int Type Code:	HWG
Program ID:	10509112
Coord Name:	Not reported
Ref Point Type Desc:	Center of a facility or station.
Latitude:	33.824360
Longitude:	-117.518200

Affiliation:

Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	5130 Hacienda Dr
Affiliation City:	Dublin
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	94568-7579
Affiliation Phone:	Not reported

Affiliation Type Desc:	Document Preparer
Entity Name:	ASHLEY CAMPBELL
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Operator
Entity Name:	Ross Dress For Less Inc.
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(925) 965-4831

Affiliation Type Desc:	Environmental Contact
Entity Name:	ASHLEY CAMPBELL
Entity Title:	Not reported
Affiliation Address:	5151 San Felipe, Suite 1000
Affiliation City:	HOUSTON

ROSS DRESS FOR LESS #0757 (Continued) **S118937731**

Affiliation State:	TX
Affiliation Country:	Not reported
Affiliation Zip:	77056
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	Ross Dress For Less Inc.
Entity Title:	Not reported
Affiliation Address:	5130 Hacienda Dr
Affiliation City:	Dublin
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	94568-7579
Affiliation Phone:	(925) 965-4831
Affiliation Type Desc:	Parent Corporation
Entity Name:	Ross Stores, Inc.
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Ashley Campbell
Entity Title:	ENVIRONMENTAL COMPLIANCE SPECIALIST
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

HAZNET:

Site Name:	ROSS DRESS FOR LESS #0757
Year:	2017
GEPAID:	CAL000397553
Contact:	KATHY HATCH
Telephone:	9259654015
Mailing Name:	Not reported
Mailing Address:	5151 SAN FELIPE ST STE 1000
Mailing City,St,Zip:	HOUSTON, TX 77056
Gen County:	Riverside
TSD EPA ID:	CAD008364432
TSD County:	Los Angeles
Tons:	0.06
CA Waste Code:	331-Off-specification, aged or surplus organics
Method:	H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	Riverside
Site Name:	ROSS DRESS FOR LESS #0757
Year:	2017
GEPAID:	CAL000397553

ROSS DRESS FOR LESS #0757 (Continued) **S118937731**

Contact:	KATHY HATCH
Telephone:	9259654015
Mailing Name:	Not reported
Mailing Address:	5151 SAN FELIPE ST STE 1000
Mailing City,St,Zip:	HOUSTON, TX 77056
Gen County:	Riverside
TSD EPA ID:	CAD008364432
TSD County:	Los Angeles
Tons:	0.0025
CA Waste Code:	181-Other inorganic solid waste
Method:	H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	Riverside

Site Name:	ROSS DRESS FOR LESS #0757
Year:	2017
GEPAID:	CAL000397553
Contact:	KATHY HATCH
Telephone:	9259654015
Mailing Name:	Not reported
Mailing Address:	5151 SAN FELIPE ST STE 1000
Mailing City,St,Zip:	HOUSTON, TX 77056
Gen County:	Riverside
TSD EPA ID:	CAD008364432
TSD County:	Los Angeles
Tons:	0.0205
CA Waste Code:	331-Off-specification, aged or surplus organics
Method:	H061-Fuel Blending Prior To Energy Recovery At Another Site
Facility County:	Riverside

Site Name:	ROSS DRESS FOR LESS #0757
Year:	2016
GEPAID:	CAL000397553
Contact:	KATHY HATCH
Telephone:	9259654015
Mailing Name:	Not reported
Mailing Address:	5151 SAN FELIPE ST STE 1000
Mailing City,St,Zip:	HOUSTON, TX 77056
Gen County:	Riverside
TSD EPA ID:	CAD008364432
TSD County:	Los Angeles
Tons:	0.033
CA Waste Code:	331-Off-specification, aged or surplus organics
Method:	H061-Fuel Blending Prior To Energy Recovery At Another Site
Facility County:	Riverside

Site Name:	ROSS DRESS FOR LESS #0757
Year:	2016
GEPAID:	CAL000397553
Contact:	KATHY HATCH
Telephone:	9259654015
Mailing Name:	Not reported
Mailing Address:	5151 SAN FELIPE ST STE 1000
Mailing City,St,Zip:	HOUSTON, TX 77056
Gen County:	Riverside
TSD EPA ID:	CAD008364432
TSD County:	Los Angeles

ROSS DRESS FOR LESS #0757 (Continued) **S118937731**

Tons: 0.001
CA Waste Code: 122-Alkaline solution without metals pH >= 12.5
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Riverside

Click this hyperlink while viewing on your computer to access
4 additional CA_HAZNET: record(s) in the EDR Site Report.

CERS TANKS:
Site ID: 149106
CERS ID: 10509112
Site Name: ROSS DRESS FOR LESS #0757
CERS Description: Chemical Storage Facilities

Violations:
Site ID: 149106
Site Name: Ross Dress For Less #0757
Violation Date: 11-06-2014
Citation: HSC 6.5 25186.2 - California Health and Safety Code, Chapter 6.5, Section(s) 25186.2
Violation Description: Failure to properly handle, store, or treat hazardous waste or provided false information submitted on the permit application and other documents.
Violation Notes: Returned to compliance on 07/19/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Site ID: 149106
Site Name: Ross Dress For Less #0757
Violation Date: 11-06-2014
Citation: HSC 6.5 25189.5(a) - California Health and Safety Code, Chapter 6.5, Section(s) 25189.5(a)
Violation Description: Failure to properly dispose of hazardous waste at an authorized location.
Violation Notes: Returned to compliance on 07/19/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Site ID: 149106
Site Name: Ross Dress For Less #0757
Violation Date: 11-06-2014
Citation: HSC 6.11 25404.1 - California Health and Safety Code, Chapter 6.11, Section(s) 25404.1
Violation Description: Failure to obtain and/or maintain an active hazardous waste generator permit.
Violation Notes: Returned to compliance on 07/19/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Site ID: 149106
Site Name: Ross Dress For Less #0757
Violation Date: 11-06-2014
Citation: 40 CFR 1 265.174 - U.S. Code of Federal Regulations, Title 40, Chapter

ROSS DRESS FOR LESS #0757 (Continued) **S118937731**

1, Section(s) 265.174
Violation Description: Failure to inspect hazardous waste storage areas at least weekly.
Violation Notes: Returned to compliance on 09/28/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 01-09-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 07-19-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: RTC- Not all Violations corrected.
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 09-28-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: RTC- violations corrected.
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 11-06-2014
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Enforcement Action:
Site ID: 149106
Site Name: Ross Dress For Less #0757
Site Address: 2519 TUSCANY ST
Site City: CORONA
Site Zip: 92881
Enf Action Date: 11-06-2014
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Riverside County Department of Env Health
Enf Action Program: HW

ROSS DRESS FOR LESS #0757 (Continued) **S118937731**

Enf Action Source: CERS

Coordinates:
Site ID: 149106
Facility Name: Ross Dress For Less #0757
Env Int Type Code: HWG
Program ID: 10509112
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 33.824360
Longitude: -117.518200

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Riverside Cnty Env Health
Entity Title: Not reported
Affiliation Address: 4065 County Circle Drive, Room 104
Affiliation City: Riverside
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92503
Affiliation Phone: (951) 358-5055

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: 5130 Hacienda Dr
Affiliation City: Dublin
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 94568-7579
Affiliation Phone: Not reported

Affiliation Type Desc: Document Preparer
Entity Name: ASHLEY CAMPBELL
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Operator
Entity Name: Ross Dress For Less Inc.
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (925) 965-4831

Affiliation Type Desc: Environmental Contact
Entity Name: ASHLEY CAMPBELL
Entity Title: Not reported

ROSS DRESS FOR LESS #0757 (Continued) **S118937731**

Affiliation Address:	5151 San Felipe, Suite 1000
Affiliation City:	HOUSTON
Affiliation State:	TX
Affiliation Country:	Not reported
Affiliation Zip:	77056
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	Ross Dress For Less Inc.
Entity Title:	Not reported
Affiliation Address:	5130 Hacienda Dr
Affiliation City:	Dublin
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	94568-7579
Affiliation Phone:	(925) 965-4831
Affiliation Type Desc:	Parent Corporation
Entity Name:	Ross Stores, Inc.
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Ashley Campbell
Entity Title:	ENVIRONMENTAL COMPLIANCE SPECIALIST
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

F20 **ULTA BEAUTY #212** **CERS HAZ WASTE** **S117311595**
2541 TUSCANY ST **HAZNET** **N/A**
< 1/8 **CORONA, CA 92881**
1 ft.

Site 2 of 2 in cluster F

Relative: CERS HAZ WASTE:
Lower

Actual: Site ID:	366548
854 ft. CERS ID:	10664476
CERS Description:	Hazardous Waste Generator

Coordinates:

Site ID:	366548
Facility Name:	ULTA BEAUTY #212
Env Int Type Code:	HWG
Program ID:	10664476
Coord Name:	Not reported
Ref Point Type Desc:	Center of a facility or station.
Latitude:	33.824490
Longitude:	-117.517840

ULTA BEAUTY #212 (Continued) **S117311595**

Affiliation:

Affiliation Type Desc:	Document Preparer
Entity Name:	Jeremy Hojnicki
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Identification Signer
Entity Name:	Jeremy Hojnicki
Entity Title:	Compliance Manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Legal Owner
Entity Name:	ULTA Beauty
Entity Title:	Not reported
Affiliation Address:	1000 Remington Blvd, Suite 120
Affiliation City:	Bolingbrook
Affiliation State:	IL
Affiliation Country:	United States
Affiliation Zip:	60440
Affiliation Phone:	(630) 410-4800

Affiliation Type Desc:	Parent Corporation
Entity Name:	ULTA Beauty
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055

Affiliation Type Desc:	Operator
Entity Name:	ULTA Beauty
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported

ULTA BEAUTY #212 (Continued) **S117311595**

Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(630) 410-4800
Affiliation Type Desc:	Environmental Contact
Entity Name:	Jeremy Hojnicki
Entity Title:	Not reported
Affiliation Address:	1000 Remington Blvd, Suite 120
Affiliation City:	Bolingbrook
Affiliation State:	IL
Affiliation Country:	Not reported
Affiliation Zip:	60440
Affiliation Phone:	Not reported
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	2541 Tuscany Street
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92881
Affiliation Phone:	Not reported

HAZNET:

Site Name:	ULTA BEAUTY 212
Year:	2017
GEPAID:	CAL000388863
Contact:	JEREMY HOJNICKI
Telephone:	6302961552
Mailing Name:	Not reported
Mailing Address:	1000 REMINGTON BLVD, SUITE 120
Mailing City,St,Zip:	BOLINGBROOK, IL 60440
Gen County:	Riverside
TSD EPA ID:	CAD008364432
TSD County:	Los Angeles
Tons:	0.002
CA Waste Code:	181-Other inorganic solid waste
Method:	H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	Riverside
Site Name:	ULTA BEAUTY 212
Year:	2017
GEPAID:	CAL000388863
Contact:	JEREMY HOJNICKI
Telephone:	6302961552
Mailing Name:	Not reported
Mailing Address:	1000 REMINGTON BLVD, SUITE 120
Mailing City,St,Zip:	BOLINGBROOK, IL 60440
Gen County:	Riverside
TSD EPA ID:	CAD008364432
TSD County:	Los Angeles
Tons:	1.912
CA Waste Code:	331-Off-specification, aged or surplus organics
Method:	H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery

ULTA BEAUTY #212 (Continued) **S117311595**

(H010-H129) Or (H131-H135)
Facility County: Riverside

Site Name: ULTA BEAUTY 212
Year: 2016
GEPAID: CAL000388863
Contact: JEREMY HOJNICKI
Telephone: 6302961552
Mailing Name: Not reported
Mailing Address: 1000 REMINGTON BLVD, SUITE 120
Mailing City,St,Zip: BOLINGBROOK, IL 60440
Gen County: Riverside
TSD EPA ID: CAD008364432
TSD County: Los Angeles
Tons: 0.029
CA Waste Code: 181-Other inorganic solid waste
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Riverside

Site Name: ULTA BEAUTY 212
Year: 2016
GEPAID: CAL000388863
Contact: JEREMY HOJNICKI
Telephone: 6302961552
Mailing Name: Not reported
Mailing Address: 1000 REMINGTON BLVD, SUITE 120
Mailing City,St,Zip: BOLINGBROOK, IL 60440
Gen County: Riverside
TSD EPA ID: CAD008364432
TSD County: Los Angeles
Tons: 0.011
CA Waste Code: 141-Off-specification, aged or surplus inorganics
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Riverside

Site Name: ULTA BEAUTY 212
Year: 2016
GEPAID: CAL000388863
Contact: JEREMY HOJNICKI
Telephone: 6302961552
Mailing Name: Not reported
Mailing Address: 1000 REMINGTON BLVD, SUITE 120
Mailing City,St,Zip: BOLINGBROOK, IL 60440
Gen County: Riverside
TSD EPA ID: CAD008364432
TSD County: Los Angeles
Tons: 1.542
CA Waste Code: 331-Off-specification, aged or surplus organics
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Riverside

Click this hyperlink while viewing on your computer to access
18 additional CA_HAZNET: record(s) in the EDR Site Report.

G21 **PACIFIC CLAY PRODUCTS INC** **ENVIROSTOR** **S104549216**
ENE **20325 TEMESCAL CANYON ROAD** **CPS-SLIC** **N/A**
< 1/8 **CORONA, CA 91719** **CHMIRS**
0.009 mi. **CERS**
46 ft. **Site 1 of 4 in cluster G**

Relative:
Lower

Actual:
810 ft.

ENVIROSTOR:

Facility ID:	33320001
Status:	Refer: Other Agency
Status Date:	04/22/1988
Site Code:	Not reported
Site Type:	Historical
Site Type Detailed:	* Historical
Acres:	Not reported
NPL:	NO
Regulatory Agencies:	NONE SPECIFIED
Lead Agency:	NONE SPECIFIED
Program Manager:	Not reported
Supervisor:	* Mmonroy
Division Branch:	Cleanup Cypress
Assembly:	67
Senate:	28
Special Program:	* CERC2
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Not reported
Latitude:	33.79611
Longitude:	-117.5005
APN:	NONE SPECIFIED
Past Use:	NONE SPECIFIED
Potential COC:	* HOUSEHOLD WASTES * DETERGENT & SOAP * WASTE OIL & MIXED OIL
Confirmed COC:	NONE SPECIFIED
Potential Description:	NONE SPECIFIED
Alias Name:	GLADDING MCBEAN COMPANY
Alias Type:	Alternate Name
Alias Name:	33320001
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	* Discovery
Completed Date:	03/09/1983
Comments:	FACILITY IDENTIFIED ID FROM RWQCB FILE SEARCH DISCHARGE WASTES TO EVAPORATION POND
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Screening
Completed Date:	10/25/1994
Comments:	Database verification project confirms NFA for DTSC.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Assessment Report
Completed Date:	04/22/1988
Comments:	PRELIM ASSESS DONE NO FURTHER ACTION FOR STATE OR EPA
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported

PACIFIC CLAY PRODUCTS INC (Continued) **S104549216**

Completed Document Type: Site Screening
Completed Date: 03/24/1987
Comments: SITE SCREENING DONE PA RECOM BASED ON LACK OF INFO ON TYPE OF OPERATION AND WASTES PRESENT

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

CPS-SLIC:
Site Name: MURDOCK DEVELOPMENT PROPERTY
Region: STATE
Facility Status: **Completed - Case Closed**
Status Date: 08/02/2005
Global Id: SL208433898
Lead Agency: SANTA ANA RWQCB (REGION 8)
Lead Agency Case Number: Not reported
Latitude: 33.8719664484546
Longitude: -117.570827465603
Case Type: Cleanup Program Site
Case Worker: Not reported
Local Agency: Not reported
RB Case Number: SL208433898
File Location: Not reported
Potential Media Affected: Other Groundwater (uses other than drinking water), Soil
Potential Contaminants of Concern: Not reported
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Site Name: GATEWAY BUSINESS PARK
Region: STATE
Facility Status: **Completed - Case Closed**
Status Date: 08/28/2015
Global Id: T10000000196
Lead Agency: SANTA ANA RWQCB (REGION 8)
Lead Agency Case Number: Not reported
Latitude: 33.826096
Longitude: -117.511588
Case Type: Cleanup Program Site
Case Worker: Not reported
Local Agency: Not reported
RB Case Number: Not reported
File Location: Regional Board
Potential Media Affected: Not reported
Potential Contaminants of Concern: Not reported
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

PACIFIC CLAY PRODUCTS INC (Continued) **S104549216**

SLIC REG 8:

Type:	Soil and Groundwater
Facility Status:	Closed
Staff:	MGC
Substance:	TPH,SOLVENT
Lead Agency:	Regional Board
Location Code:	Not reported
Thomas Bros Code:	Not reported

CHMIRS:

OES Incident Number:	9-5299
OES notification:	12/15/1999
OES Date:	Not reported
OES Time:	Not reported
Date Completed:	**Not reported**
Property Use:	Not reported
Agency Id Number:	Not reported
Agency Incident Number:	Not reported
Time Notified:	Not reported
Time Completed:	Not reported
Surrounding Area:	Not reported
Estimated Temperature:	Not reported
Property Management:	Not reported
More Than Two Substances Involved?:	Not reported
Resp Agncy Personel # Of Decontaminated:	Not reported
Responding Agency Personel # Of Injuries:	Not reported
Responding Agency Personel # Of Fatalities:	Not reported
Others Number Of Decontaminated:	Not reported
Others Number Of Injuries:	Not reported
Others Number Of Fatalities:	Not reported
Vehicle Make/year:	Not reported
Vehicle License Number:	Not reported
Vehicle State:	Not reported
Vehicle Id Number:	Not reported
CA DOT PUC/ICC Number:	Not reported
Company Name:	Not reported
Reporting Officer Name/ID:	Not reported
Report Date:	Not reported
Facility Telephone:	Not reported
Waterway Involved:	No
Waterway:	Not reported
Spill Site:	Not reported
Cleanup By:	Responsible Party
Containment:	Not reported
What Happened:	Not reported
Type:	Not reported
Measure:	Not reported
Other:	Not reported
Date/Time:	Not reported
Year:	1999
Agency:	GeoMatrix Consultants
Incident Date:	12/7/199912:00:00 AM
Admin Agency:	Corona Fire Department
Amount:	Not reported
Contained:	Yes
Site Type:	Industrial Plant

PACIFIC CLAY PRODUCTS INC (Continued) **S104549216**

E Date:	Not reported
Substance:	Diesel
Unknown:	0
Substance #2:	Not reported
Substance #3:	Not reported
Evacuations:	0
Number of Injuries:	0
Number of Fatalities:	0
#1 Pipeline:	Not reported
#2 Pipeline:	Not reported
#3 Pipeline:	Not reported
#1 Vessel >= 300 Tons:	Not reported
#2 Vessel >= 300 Tons:	Not reported
#3 Vessel >= 300 Tons:	Not reported
Evacs:	Not reported
Injuries:	Not reported
Fatals:	Not reported
Comments:	Not reported
Description:	Encountered spillage during excavation at a construction site. Unknown source.

CERS TANKS:

Site ID:	209723
CERS ID:	SL208433898
Site Name:	MURDOCK DEVELOPMENT PROPERTY
CERS Description:	Cleanup Program Site
Site ID:	208357
CERS ID:	T10000000196
Site Name:	GATEWAY BUSINESS PARK
CERS Description:	Cleanup Program Site
Site ID:	82109
CERS ID:	10161483
Site Name:	VERIZON WIRELESS: CAJALCO
CERS Description:	Chemical Storage Facilities

Violations:

Site ID:	82109
Site Name:	Verizon Wireless: Cajalco
Violation Date:	10-20-2017
Citation:	HSC 6.95 25508.2 - California Health and Safety Code, Chapter 6.95, Section(s) 25508.2
Violation Description:	Failure to annually review and electronically certify that the business plan is complete and accurate on or before the annual due date.
Violation Notes:	Returned to compliance on 01/25/2018.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	82109
Site Name:	Verizon Wireless: Cajalco
Violation Date:	08-09-2017
Citation:	HSC 6.95 25508.2 - California Health and Safety Code, Chapter 6.95, Section(s) 25508.2
Violation Description:	Failure to annually review and electronically certify that the

PACIFIC CLAY PRODUCTS INC (Continued) **S104549216**

	business plan is complete and accurate on or before the annual due date.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	82109
Site Name:	Verizon Wireless: Cajalco
Violation Date:	09-12-2017
Citation:	HSC 6.95 25508.2 - California Health and Safety Code, Chapter 6.95, Section(s) 25508.2
Violation Description:	Failure to annually review and electronically certify that the business plan is complete and accurate on or before the annual due date.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS

Evaluation:

Eval General Type:	Other/Unknown
Eval Date:	09-12-2017
Violations Found:	Yes
Eval Type:	Other, not routine, done by local agency
Eval Notes:	Not reported
Eval Division:	Riverside County Department of Env Health
Eval Program:	HMRRP
Eval Source:	CERS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	03-30-2017
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Riverside County Department of Env Health
Eval Program:	HMRRP
Eval Source:	CERS
Eval General Type:	Other/Unknown
Eval Date:	08-09-2017
Violations Found:	Yes
Eval Type:	Other, not routine, done by local agency
Eval Notes:	Not reported
Eval Division:	Riverside County Department of Env Health
Eval Program:	HMRRP
Eval Source:	CERS
Eval General Type:	Other/Unknown
Eval Date:	10-20-2017
Violations Found:	Yes
Eval Type:	Other, not routine, done by local agency
Eval Notes:	Not reported
Eval Division:	Riverside County Department of Env Health
Eval Program:	HMRRP
Eval Source:	CERS

PACIFIC CLAY PRODUCTS INC (Continued) **S104549216**

Affiliation:

Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055

Affiliation Type Desc:	Document Preparer
Entity Name:	Myrna Allende
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Legal Owner
Entity Name:	Verizon Wireless
Entity Title:	Not reported
Affiliation Address:	15505 Sand Canyon Avenue, MS D-104
Affiliation City:	Irvine
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92618
Affiliation Phone:	(949) 286-7000

Affiliation Type Desc:	Identification Signer
Entity Name:	Myrna Allende
Entity Title:	Regulatory Specialist
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Operator
Entity Name:	Verizon Wireless
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(949) 286-7000

Affiliation Type Desc:	Environmental Contact
Entity Name:	Environmental Compliance
Entity Title:	Not reported
Affiliation Address:	15505 Sand Canyon Avenue, MS D-104
Affiliation City:	Irvine
Affiliation State:	CA

PACIFIC CLAY PRODUCTS INC (Continued) **S104549216**

Affiliation Country: Not reported
Affiliation Zip: 92618
Affiliation Phone: Not reported

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: 15505 Sand Canyon Avenue, MS D-104
Affiliation City: Irvine
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92618
Affiliation Phone: Not reported

Affiliation Type Desc: Parent Corporation
Entity Name: Verizon Wireless [Southern California]
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

G22 **CES ENERGY CORONA, LTD.** **SWEEPS UST** **1000249930**
ENE **20325 TEMESCAL CANYON RD** **HIST UST** **N/A**
< 1/8 **CORONA, CA 91719** **CA FID UST**
0.009 mi. **EMI**
46 ft. **Site 2 of 4 in cluster G** **CERS**

Relative: **Lower**
Actual: **810 ft.**

SWEEPS UST:
Status: Active
Comp Number: 40231
Number: 1
Board Of Equalization: 44-018238
Referral Date: 11-17-92
Action Date: 11-17-92
Created Date: 02-29-88
Owner Tank Id: 000781
SWRCB Tank Id: 33-000-040231-000001
Tank Status: A
Capacity: 500
Active Date: 11-17-92
Tank Use: OIL
STG: W
Content: WASTE OIL
Number Of Tanks: 3

Status: Active
Comp Number: 40231
Number: 1
Board Of Equalization: 44-018238
Referral Date: 11-17-92
Action Date: 11-17-92
Created Date: 02-29-88
Owner Tank Id: 000781
SWRCB Tank Id: 33-000-040231-000002

CES ENERGY CORONA, LTD. (Continued) **1000249930**

Tank Status: A
Capacity: 10000
Active Date: 11-17-92
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 40231
Number: 1
Board Of Equalization: 44-018238
Referral Date: 11-17-92
Action Date: 11-17-92
Created Date: 02-29-88
Owner Tank Id: 000781
SWRCB Tank Id: 33-000-040231-000003
Tank Status: A
Capacity: 20000
Active Date: 11-17-92
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

HIST UST:
File Number: 0001F858
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0001F858.pdf
Region: STATE
Facility ID: 00000040231
Facility Type: Other
Other Type: MFG. CLAY SEWER PIPE
Contact Name: Not reported
Telephone: 7147356020
Owner Name: PACIFIC CLAY PRODUCTS INC.
Owner Address: 20325 OLD HIGHWAY 71
Owner City,St,Zip: CORONA, CA 91719
Total Tanks: 0004

Tank Num: 001
Container Num: 1
Year Installed: 1980
Tank Capacity: 00000500
Tank Used for: WASTE
Type of Fuel: WASTE OIL
Container Construction Thickness: Not reported
Leak Detection: None

Tank Num: 002
Container Num: 2
Year Installed: 1980
Tank Capacity: 00010000
Tank Used for: PRODUCT
Type of Fuel: UNLEADED
Container Construction Thickness: Not reported
Leak Detection: Visual, Stock Inventor

CES ENERGY CORONA, LTD. (Continued) **1000249930**

Tank Num:	003
Container Num:	3
Year Installed:	1980
Tank Capacity:	00020000
Tank Used for:	PRODUCT
Type of Fuel:	DIESEL
Container Construction Thickness:	Not reported
Leak Detection:	Visual, Stock Inventor

Tank Num:	004
Container Num:	4
Year Installed:	1980
Tank Capacity:	00010000
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	Not reported
Leak Detection:	Visual, Stock Inventor

Click here for Geo Tracker PDF:

CA FID UST:

Facility ID:	33006477
Regulated By:	UTNKA
Regulated ID:	00040231
Cortese Code:	Not reported
SIC Code:	Not reported
Facility Phone:	7147356020
Mail To:	Not reported
Mailing Address:	20325 TEMESCAL CANYON RD
Mailing Address 2:	Not reported
Mailing City,St,Zip:	CORONA 91719
Contact:	Not reported
Contact Phone:	Not reported
DUNs Number:	Not reported
NPDES Number:	Not reported
EPA ID:	Not reported
Comments:	Not reported
Status:	Active

EMI:

Year:	1987
County Code:	33
Air Basin:	SC
Facility ID:	20564
Air District Name:	SC
SIC Code:	3255
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	88
Reactive Organic Gases Tons/Yr:	82
Carbon Monoxide Emissions Tons/Yr:	6
NOX - Oxides of Nitrogen Tons/Yr:	25
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	4
Part. Matter 10 Micrometers and Smllr Tons/Yr:	4

CES ENERGY CORONA, LTD. (Continued) **1000249930**

Year:	1990
County Code:	33
Air Basin:	SC
Facility ID:	20564
Air District Name:	SC
SIC Code:	3255
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	62
Reactive Organic Gases Tons/Yr:	46
Carbon Monoxide Emissions Tons/Yr:	13
NOX - Oxides of Nitrogen Tons/Yr:	33
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	2
Part. Matter 10 Micrometers and Smllr Tons/Yr:	2

Year:	1990
County Code:	33
Air Basin:	SC
Facility ID:	57818
Air District Name:	SC
SIC Code:	1794
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	25
Reactive Organic Gases Tons/Yr:	2
Carbon Monoxide Emissions Tons/Yr:	8
NOX - Oxides of Nitrogen Tons/Yr:	5
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1993
County Code:	33
Air Basin:	SC
Facility ID:	57818
Air District Name:	SC
SIC Code:	1794
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	32
Reactive Organic Gases Tons/Yr:	3
Carbon Monoxide Emissions Tons/Yr:	11
NOX - Oxides of Nitrogen Tons/Yr:	7
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1995
County Code:	33
Air Basin:	SC
Facility ID:	20564
Air District Name:	SC
SIC Code:	3255

CES ENERGY CORONA, LTD. (Continued) **1000249930**

Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	39
Reactive Organic Gases Tons/Yr:	28
Carbon Monoxide Emissions Tons/Yr:	7
NOX - Oxides of Nitrogen Tons/Yr:	23
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	1
Part. Matter 10 Micrometers and Smllr Tons/Yr:	1

Year:	1995
County Code:	33
Air Basin:	SC
Facility ID:	57818
Air District Name:	SC
SIC Code:	1794
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	32
Reactive Organic Gases Tons/Yr:	3
Carbon Monoxide Emissions Tons/Yr:	11
NOX - Oxides of Nitrogen Tons/Yr:	7
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1996
County Code:	33
Air Basin:	SC
Facility ID:	57818
Air District Name:	SC
SIC Code:	1794
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	84
Reactive Organic Gases Tons/Yr:	8
Carbon Monoxide Emissions Tons/Yr:	10
NOX - Oxides of Nitrogen Tons/Yr:	7
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1996
County Code:	33
Air Basin:	SC
Facility ID:	20564
Air District Name:	SC
SIC Code:	3255
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	9
Reactive Organic Gases Tons/Yr:	6
Carbon Monoxide Emissions Tons/Yr:	6

CES ENERGY CORONA, LTD. (Continued) **1000249930**

NOX - Oxides of Nitrogen Tons/Yr:	32
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	6
Part. Matter 10 Micrometers and Smllr Tons/Yr:	6

Year:	1997
County Code:	33
Air Basin:	SC
Facility ID:	57818
Air District Name:	SC
SIC Code:	1794
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	73
Reactive Organic Gases Tons/Yr:	7
Carbon Monoxide Emissions Tons/Yr:	10
NOX - Oxides of Nitrogen Tons/Yr:	8
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1997
County Code:	33
Air Basin:	SC
Facility ID:	20564
Air District Name:	SC
SIC Code:	3255
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	12
Reactive Organic Gases Tons/Yr:	9
Carbon Monoxide Emissions Tons/Yr:	6
NOX - Oxides of Nitrogen Tons/Yr:	31
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	3
Part. Matter 10 Micrometers and Smllr Tons/Yr:	3

Year:	1998
County Code:	33
Air Basin:	SC
Facility ID:	57818
Air District Name:	SC
SIC Code:	1794
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	90
Reactive Organic Gases Tons/Yr:	8
Carbon Monoxide Emissions Tons/Yr:	10
NOX - Oxides of Nitrogen Tons/Yr:	8
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1998

CES ENERGY CORONA, LTD. (Continued) **1000249930**

County Code:	33
Air Basin:	SC
Facility ID:	20564
Air District Name:	SC
SIC Code:	3255
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	11
Reactive Organic Gases Tons/Yr:	9
Carbon Monoxide Emissions Tons/Yr:	6
NOX - Oxides of Nitrogen Tons/Yr:	31
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	3
Part. Matter 10 Micrometers and Smllr Tons/Yr:	3

Year:	1999
County Code:	33
Air Basin:	SC
Facility ID:	57818
Air District Name:	SC
SIC Code:	1794
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	73
Reactive Organic Gases Tons/Yr:	7
Carbon Monoxide Emissions Tons/Yr:	10
NOX - Oxides of Nitrogen Tons/Yr:	8
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1999
County Code:	33
Air Basin:	SC
Facility ID:	20564
Air District Name:	SC
SIC Code:	3255
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	12
Reactive Organic Gases Tons/Yr:	9
Carbon Monoxide Emissions Tons/Yr:	6
NOX - Oxides of Nitrogen Tons/Yr:	31
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	3
Part. Matter 10 Micrometers and Smllr Tons/Yr:	3

Year:	2000
County Code:	33
Air Basin:	SC
Facility ID:	57818
Air District Name:	SC
SIC Code:	1794
Air District Name:	SOUTH COAST AQMD

CES ENERGY CORONA, LTD. (Continued) **1000249930**

Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	73
Reactive Organic Gases Tons/Yr:	7
Carbon Monoxide Emissions Tons/Yr:	10
NOX - Oxides of Nitrogen Tons/Yr:	8
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2000
County Code:	33
Air Basin:	SC
Facility ID:	20564
Air District Name:	SC
SIC Code:	3255
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	12
Reactive Organic Gases Tons/Yr:	9
Carbon Monoxide Emissions Tons/Yr:	6
NOX - Oxides of Nitrogen Tons/Yr:	31
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	3
Part. Matter 10 Micrometers and Smllr Tons/Yr:	3

Year:	2001
County Code:	33
Air Basin:	SC
Facility ID:	57818
Air District Name:	SC
SIC Code:	1794
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Y
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	73
Reactive Organic Gases Tons/Yr:	7
Carbon Monoxide Emissions Tons/Yr:	10
NOX - Oxides of Nitrogen Tons/Yr:	8
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2001
County Code:	33
Air Basin:	SC
Facility ID:	20564
Air District Name:	SC
SIC Code:	3255
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Y
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	12
Reactive Organic Gases Tons/Yr:	9
Carbon Monoxide Emissions Tons/Yr:	6
NOX - Oxides of Nitrogen Tons/Yr:	31

CES ENERGY CORONA, LTD. (Continued) **1000249930**

SOX - Oxides of Sulphur Tons/Yr: 0
Particulate Matter Tons/Yr: 3
Part. Matter 10 Micrometers and Smllr Tons/Yr: 3

CERS TANKS:
Site ID: 485363
CERS ID: 110001145546
Site Name: PACIFIC CLAY PRODUCTS
CERS Description: US EPA Air Emission Inventory System (EIS)

Affiliation:
Affiliation Type Desc: Public Contact
Entity Name: JOHN KIRK
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Environmental Contact
Entity Name: ENVIR MGMT
Entity Title: Not reported
Affiliation Address: 20325 TEMESCAL CYN ROAD
Affiliation City: CORONA
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

G23 **GAMBOA TRUCK LINES** **RCRA-SQG** **1000163906**
ENE **20305 TEMESCAL CYN** **FINDS** **CAD981996614**
< 1/8 **CORONA, CA 91718** **ECHO**
0.010 mi. **HAZNET**
55 ft. **Site 3 of 4 in cluster G**

Relative: **Lower**
Actual: **810 ft.**

RCRA-SQG:
Date form received by agency: 09/01/1996
Facility name: GAMBOA TRUCK LINES
Facility address: 20305 TEMESCAL CYN
CORONA, CA 91718
EPA ID: CAD981996614
Contact: Not reported
Contact address: Not reported
Not reported
Contact country: US
Contact telephone: Not reported
Contact email: Not reported
EPA Region: 09
Classification: Small Small Quantity Generator
Description: Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

GAMBOA TRUCK LINES (Continued) **1000163906**

Owner/Operator Summary:

Owner/operator name:	NOT REQUIRED
Owner/operator address:	NOT REQUIRED
	NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	415-555-1212
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	FREDRIC R GAMBOA
Owner/operator address:	NOT REQUIRED
	NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	415-555-1212
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Historical Generators:

Date form received by agency:	05/21/1987
Site name:	GAMBOA TRUCK LINES
Classification:	Large Quantity Generator

Violation Status: No violations found

FINDS:

Registry ID: 110002770868

Environmental Interest/Information System

GAMBOA TRUCK LINES (Continued) **1000163906**

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1000163906
Registry ID:	110002770868
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110002770868

HAZNET:

Site Name:	GAMBOA TRUCK LINES
Year:	2000
GEPAID:	CAD981996614
Contact:	FRED GAMBOA/PRES
Telephone:	0000000000
Mailing Name:	Not reported
Mailing Address:	PO BOX 418
Mailing City,St,Zip:	CORONA, CA 928780418
Gen County:	Riverside
TSD EPA ID:	CAT000613927
TSD County:	San Bernardino
Tons:	0.42
CA Waste Code:	134-Aqueous solution with total organic residues less than 10 percent
Method:	H01-Transfer Station
Facility County:	Riverside

Site Name:	GAMBOA TRUCK LINES
Year:	1999
GEPAID:	CAD981996614
Contact:	FRED GAMBOA/PRES
Telephone:	0000000000
Mailing Name:	Not reported
Mailing Address:	23835 TEMESCAL CANYON RD
Mailing City,St,Zip:	CORONA, CA 917194972
Gen County:	Riverside
TSD EPA ID:	CAT000613893
TSD County:	Los Angeles
Tons:	0.4494
CA Waste Code:	134-Aqueous solution with total organic residues less than 10 percent
Method:	H01-Transfer Station
Facility County:	Riverside

Site Name:	GAMBOA TRUCK LINES
Year:	1999
GEPAID:	CAD981996614
Contact:	FRED GAMBOA/PRES
Telephone:	0000000000
Mailing Name:	Not reported
Mailing Address:	23835 TEMESCAL CANYON RD

GAMBOA TRUCK LINES (Continued) **1000163906**

Mailing City,St,Zip: CORONA, CA 917194972
Gen County: Riverside
TSD EPA ID: CAT000613927
TSD County: San Bernardino
Tons: 1.9572
CA Waste Code: 134-Aqueous solution with total organic residues less than 10 percent
Method: H01-Transfer Station
Facility County: Riverside

Site Name: GAMBOA TRUCK LINES
Year: 1998
GEPAID: CAD981996614
Contact: DAVID GAMBOA SHOP FOREMAN
Telephone: 9092778636
Mailing Name: Not reported
Mailing Address: PO BOX 418
Mailing City,St,Zip: CORONA, CA 928780418
Gen County: Riverside
TSD EPA ID: CAL000113451
TSD County: Los Angeles
Tons: 0.374
CA Waste Code: 343-Unspecified organic liquid mixture
Method: H01-Transfer Station
Facility County: Riverside

Site Name: GAMBOA TRUCK LINES
Year: 1997
GEPAID: CAD981996614
Contact: DAVID GAMBOA SHOP FOREMAN
Telephone: 9092778636
Mailing Name: Not reported
Mailing Address: PO BOX 418
Mailing City,St,Zip: CORONA, CA 928780418
Gen County: Riverside
TSD EPA ID: CAD982444481
TSD County: San Bernardino
Tons: 0.4
CA Waste Code: 352-Other organic solids
Method: H01-Transfer Station
Facility County: Riverside

Click this hyperlink while viewing on your computer to access
4 additional CA_HAZNET: record(s) in the EDR Site Report.

D24 **UPLAND DIVISION** **HIST UST** **U001569054**
NE **20120 TEMESCAL CANYON RD** **N/A**
< 1/8 **CORONA, CA 91719**
0.017 mi.
88 ft. **Site 2 of 2 in cluster D**

Relative: HIST UST:
Lower
File Number: 0001F43F
Actual: URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0001F43F.pdf
817 ft. Region: STATE
Facility ID: 00000002471
Facility Type: Other
Other Type: HARVESTING ASSN.
Contact Name: Not reported

UPLAND DIVISION (Continued) **U001569054**

Telephone:	7147375940
Owner Name:	BLUE GOOSE GROWERS INC.
Owner Address:	332 E COMMONWEALTH AVE
Owner City,St,Zip:	FULLERTON, CA 92632
Total Tanks:	0002
Tank Num:	001
Container Num:	10
Year Installed:	1979
Tank Capacity:	00012000
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	Not reported
Leak Detection:	Visual, Stock Inventor
Tank Num:	002
Container Num:	11
Year Installed:	Not reported
Tank Capacity:	00012000
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	Not reported
Leak Detection:	Visual, Stock Inventor

Click here for Geo Tracker PDF:

G25 **EVMWD** **RCRA NonGen / NLR** **1024767461**
ENE **20320 TEMESCAL CANYON RD.** **CAC002987337**
< 1/8 **CORONA, CA 92881**
0.023 mi.
123 ft. **Site 4 of 4 in cluster G**

Relative:
Lower

Actual:
807 ft.

RCRA NonGen / NLR:

Date form received by agency:	10/31/2018
Facility name:	EVMWD
Facility address:	20320 TEMESCAL CANYON RD. CORONA, CA 92881
EPA ID:	CAC002987337
Mailing address:	31315 CHANEY ST. LAKE ELSINORE, CA 92530
Contact:	SHAWN GRAY
Contact address:	31315 CHANEY ST. LAKE ELSINORE, CA 92530
Contact country:	Not reported
Contact telephone:	951-757-3257
Contact email:	SGRAY@EVMWD.NET
EPA Region:	09
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	SHAWN GRAY
Owner/operator address:	31315 CHANEY ST. LAKE ELSINORE, CA 92530
Owner/operator country:	Not reported
Owner/operator telephone:	951-757-3257
Owner/operator email:	Not reported

EVMWD (Continued) **1024767461**

Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported
Owner/operator name:	EVMWD ABARGIL
Owner/operator address:	31315 CHANEY ST. LAKE ELSINORE, CA 92530
Owner/operator country:	Not reported
Owner/operator telephone:	951-674-3146
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

---

26 **CORONA INDUSTRIAL SAND PROJECT (RECLAIMED)** **MINES** **S117661349**
NNE **10000 STOCKDALE HWY, SUITE 300** **N/A**
< 1/8 **, CA**
0.032 mi.
169 ft.

Relative: **Lower**

Actual: **851 ft.**

MINES:

Latitude:	33.828056
Longitude:	-117.516944
Lead Agency identification code:	33.1
Lead Agency name:	City of Corona
Year of the operator supplied annual report:	2014
Type of report submitted by operator:	2
Number of acres disturbed by the mine:	29
Status of mining operation:	RECLAIMED
Status of mine reclamation:	RECLAMATION IN PROGRESS
Mine operator:	GATEWAY BUSINESS PARK, LLC
Operator Address:	10000 STOCKDALE HIGHWAY, SUITE 300
Operator City, State, Zip:	BAKERSFIELD, CA 93311

CORONA INDUSTRIAL SAND PROJECT (RECLAIMED) (Continued) **S117661349**

Operator County:	Not reported
Mine owner:	MURDOCK REALTY LLC
Owner Address:	10000 STOCKDALE HWY, SUITE 300
Owner City, State, Zip:	BAKERSFIELD, CA 93311
Owner County:	Not reported
Reclamation plan identification number:	Not reported
Primary product produced by the mine:	CINDERS
Other products produced by the mine:	Not reported
Type of mining utilized by mine:	TAILINGS PROCESSING
Conditional use permit identification number:	SMP 109
Number of acres permitted for mining disturbance:	135
Total amount of funds posted by the mine for reclamation:	Not reported
Financial Assurance Cost Estimate for reclamation:	0

---

27 **LISTON BRICK COMPANY** **SEMS** **1012043067**
ESE **3710 TEMESCAL CANYON ROAD** **PRP** **CAN000908693**
< 1/8 **CORONA, CA 92883** **ECHO**
0.064 mi.
340 ft.

Relative:
Lower

Actual:
834 ft.

SEMS:

Site ID:	0908693
EPA ID:	CAN000908693
Cong District:	Not reported
FIPS Code:	06065
Latitude:	Not reported
Longitude:	Not reported
FF:	N
NPL:	Not on the NPL
Non NPL Status:	Removal Only Site (No Site Assessment Work Needed)

SEMS Detail:

Region:	09
Site ID:	0908693
EPA ID:	CAN000908693
Site Name:	LISTON BRICK COMPANY
NPL:	N
FF:	N
OU:	00
Action Code:	BB
Action Name:	PRP RV
SEQ:	1
Start Date:	2008-11-01 04:00:00
Finish Date:	6/23/2009 5:00:00 AM
Qual:	C
Current Action Lead:	EPA Ovrsght

PRP:

PRP Name:	CRAIG HALL
	LISTON BRICK COMPANY OF CORONA

ECHO:

Envid:	1012043067
Registry ID:	110020775927
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110020775927

H28 **ARANTINE HILLS LIFT STATION** **CERS TANKS** **S123522243**
West **2590 BEDFORD CANYON RD** **CERS** **N/A**
< 1/8 **CORONA, CA 92883**
0.117 mi.
616 ft. **Site 1 of 2 in cluster H**

Relative:
Higher

Actual:
916 ft.

CERS TANKS:

Facility Name:	ARANTINE HILLS LIFT STATION
Site ID:	443937
CERS ID:	10774030
CERS Description:	Aboveground Petroleum Storage

Affiliation:

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	755 Public Safety Way
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92880
Affiliation Phone:	Not reported

Affiliation Type Desc:	Identification Signer
Entity Name:	Katie Hockett
Entity Title:	Operations Manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Legal Owner
Entity Name:	City of Corona, Department of Water & Power
Entity Title:	Not reported
Affiliation Address:	755 Public Safety Way
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92880
Affiliation Phone:	(951) 736-2234

Affiliation Type Desc:	Operator
Entity Name:	City of Corona, Department of Water & Power
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(951) 736-2234

Affiliation Type Desc:	Document Preparer
Entity Name:	William Carrasco
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported

ARANTINE HILLS LIFT STATION (Continued) **S123522243**

Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Parent Corporation
Entity Name: City Of Corona Department of Water and Power
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: CUPA District
Entity Name: Riverside Cnty Env Health
Entity Title: Not reported
Affiliation Address: 4065 County Circle Drive, Room 104
Affiliation City: Riverside
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92503
Affiliation Phone: (951) 358-5055

Affiliation Type Desc: Environmental Contact
Entity Name: Katie Hockett
Entity Title: Not reported
Affiliation Address: 755 Public Safety Way
Affiliation City: Corona
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92880
Affiliation Phone: Not reported

CERS TANKS:
Site ID: 443937
CERS ID: 10774030
Site Name: ARANTINE HILLS LIFT STATION
CERS Description: Chemical Storage Facilities

Affiliation:
Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: 755 Public Safety Way
Affiliation City: Corona
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92880
Affiliation Phone: Not reported

Affiliation Type Desc: Identification Signer
Entity Name: Katie Hockett
Entity Title: Operations Manager
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported

ARANTINE HILLS LIFT STATION (Continued) **S123522243**

Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	City of Corona, Department of Water & Power
Entity Title:	Not reported
Affiliation Address:	755 Public Safety Way
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92880
Affiliation Phone:	(951) 736-2234
Affiliation Type Desc:	Operator
Entity Name:	City of Corona, Department of Water & Power
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(951) 736-2234
Affiliation Type Desc:	Document Preparer
Entity Name:	William Carrasco
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Parent Corporation
Entity Name:	City Of Corona Department of Water and Power
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055
Affiliation Type Desc:	Environmental Contact
Entity Name:	Katie Hockett
Entity Title:	Not reported

ARANTINE HILLS LIFT STATION (Continued) **S123522243**

Affiliation Address:	755 Public Safety Way
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92880
Affiliation Phone:	Not reported

H29 **MCMILLAN BROS CITRUS RANCH** **HIST UST** **U001569043**
West **20551 BEDFORD CANYON RD** **N/A**
1/8-1/4 **CORONA, CA 91719**
0.128 mi.
675 ft. **Site 2 of 2 in cluster H**

Relative: HIST UST:
Higher

Actual:
917 ft.

File Number:	0001F7DD
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0001F7DD.pdf
Region:	STATE
Facility ID:	00000043326
Facility Type:	Other
Other Type:	CITRUS RANCH
Contact Name:	HAROLD C. MCMILLAN
Telephone:	7147377241
Owner Name:	MCMILLAN BROS. CITRUS RANCH
Owner Address:	20551 BEDFORD CANYON RD
Owner City,St,Zip:	CORONA, CA 91719
Total Tanks:	0005
Tank Num:	001
Container Num:	#1
Year Installed:	1977
Tank Capacity:	00000550
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	Not reported
Leak Detection:	Visual, Stock Inventor
Tank Num:	002
Container Num:	#2
Year Installed:	1980
Tank Capacity:	00000500
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	Not reported
Leak Detection:	Visual, Stock Inventor
Tank Num:	003
Container Num:	#3
Year Installed:	1980
Tank Capacity:	00000500
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	Not reported
Leak Detection:	Visual, Stock Inventor
Tank Num:	004
Container Num:	#4
Year Installed:	1979

MCMILLAN BROS CITRUS RANCH (Continued) **U001569043**

Tank Capacity:	00000265
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	Not reported
Leak Detection:	Visual, Stock Inventor

Tank Num:	005
Container Num:	#5
Year Installed:	1979
Tank Capacity:	00000265
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	Not reported
Leak Detection:	Visual, Stock Inventor

Click here for Geo Tracker PDF:

I30 **EAGLE GLEN MOBIL** **CERS HAZ WASTE** **S113142685**
SSW **2261 EAGLE GLEN PKWY** **CERS TANKS** **N/A**
1/8-1/4 **CORONA, CA 92883** **HAZNET**
0.135 mi. **CERS**
714 ft. **Site 1 of 2 in cluster I**

Relative: **Higher**

Actual: **914 ft.**

CERS HAZ WASTE:

Site ID:	391913
CERS ID:	10404193
CERS Description:	Hazardous Waste Generator

Violations:

Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016
Citation:	23 CCR 16 2631(g), 2632(c)(2)(A) & (B) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2631(g), 2632(c)(2)(A) & (B)
Violation Description:	Failure of the double-walled interstitial space of the tank to be continuously monitored with an audible and visual alarm.
Violation Notes:	Returned to compliance on 11/02/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS

Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	23 CCR 16 2638 - California Code of Regulations, Title 23, Chapter 16, Section(s) 2638
Violation Description:	Failure to test leak detection equipment as required every 12 months (VPH, sensor, LLD, ATG, etc.) and/or submit monitoring system certification to the CUPA within 30 days of completion of the test
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS

Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015

EAGLE GLEN MOBIL (Continued) **S113142685**

Citation:	23 CCR 16 2636(f)(1) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)(1)
Violation Description:	Failure of the double wall pressurized piping in the turbine sump to be continuously monitored with a system that activates an audible and visual alarm or restricts or stops flow at dispenser when a leak is detected.
Violation Notes:	Returned to compliance on 11/05/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-06-2017
Citation:	HSC 6.7 25290.2(d) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.2(d)
Violation Description:	Failure of a UST system installed on or after July 1, 2003 and before July 1, 2004 to be designed and constructed with a monitoring system capable of detecting the entry of the hazardous substance stored in the primary containment into the secondary containment and capable of detecting water intrusion into the secondary containment.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	05-22-2015
Citation:	HSC 6.95 25505(a)(4) - California Health and Safety Code, Chapter 6.95, Section(s) 25505(a)(4)
Violation Description:	Failure to provide initial and annual training to all employees in safety procedures in the event of a release or threatened release of a hazardous material or failure to document and maintain training records for a minimum of three years.
Violation Notes:	Returned to compliance on 04/08/2016. Provide annual employee training documents.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016
Citation:	HSC 6.7 25290.1(d) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(d)
Violation Description:	Failure of a UST system installed on or after July 1, 2004 to be designed and constructed with a monitoring system capable of detecting the entry of the liquid or vapor-phase of the hazardous substance stored in the primary containment into the secondary containment and capable of detecting water intrusion into the secondary containment.
Violation Notes:	Returned to compliance on 11/02/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913

EAGLE GLEN MOBIL (Continued) **S113142685**

Site Name: Eagle Glen Mobil
Violation Date: 07-06-2017
Citation: HSC 6.7 25290.1(d) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(d)
Violation Description: Failure of a UST system installed on or after July 1, 2004 to be designed and constructed with a monitoring system capable of detecting the entry of the liquid or vapor-phase of the hazardous substance stored in the primary containment into the secondary containment and capable of detecting water intrusion into the secondary containment.
Violation Notes: Returned to compliance on 09/13/2017.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-09-2015
Citation: HSC 6.7 25291 - California Health and Safety Code, Chapter 6.7, Section(s) 25291
Violation Description: Failure to maintain under-dispenser containment, sumps, and/or other secondary containment in good condition and/or free of debris/liquid.
Violation Notes: Returned to compliance on 08/08/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-07-2016
Citation: 23 CCR 16 2636(f)(2) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)(2)
Violation Description: Failure of the line leak detector (LLD) monitoring pressurized piping to meet one or more of the following requirements:Monitor at least hourly.Be capable of detecting a release of 3.0 gallons per hour at 10 p.s.i.g. Restrict or shut off the flow of product through the piping when a leak is detected.
Violation Notes: Returned to compliance on 09/13/2017.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 05-22-2015
Citation: HSC 6.95 25504(a) - California Health and Safety Code, Chapter 6.95, Section(s) 25504(a)
Violation Description: Failure to complete and/or submit hazardous material inventory forms for all reportable hazardous materials on site.
Violation Notes: Returned to compliance on 04/08/2016. Add 180 gallon waste oil tank.
Violation Division: Corona Fire Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 06-26-2014
Citation: HSC 6.7 25291 - California Health and Safety Code, Chapter 6.7,

EAGLE GLEN MOBIL (Continued) **S113142685**

	Section(s) 25291
Violation Description:	Failure to maintain under-dispenser containment, sumps, and/or other secondary containment in good condition and/or free of debris/liquid.
Violation Notes:	Returned to compliance on 07/10/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	23 CCR 16 2665 - California Code of Regulations, Title 23, Chapter 16, Section(s) 2665
Violation Description:	Failure of the overfill prevention system to meet one of the following requirements: 1. Alert the transfer operator when the tank is 90 percent full by restricting the flow into the tank or triggering an audible and visual alarm; or 2. Restrict delivery of flow to the tank at least 30 minutes before the tank overfills, provided the restriction occurs when the tank is filled to no more than 95 percent of capacity; and activate an audible alarm at least five minutes before the tank overfills; or 3. Provide positive shut-off of flow to the tank when the tank is filled to no more than 95 percent of capacity; or 4. Provide positive shut-off of flow to the tank so that none of the fittings located on the top of the tank are exposed to product due to overfilling.
Violation Notes:	Returned to compliance on 11/05/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	06-08-2018
Citation:	Un-Specified
Violation Description:	Business Plan Program - Operations/Maintenance - General Local Ordinance
Violation Notes:	Spill kit is missing
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	HSC 6.7 25284.2 - California Health and Safety Code, Chapter 6.7, Section(s) 25284.2
Violation Description:	Failure to test the spill bucket annually.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	HSC 6.7 25290.1(e) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(e)

EAGLE GLEN MOBIL (Continued) **S113142685**

Violation Description:	Failure to maintain the interstitial space under constant vacuum, pressure, or hydrostatic such that a breach in the primary or secondary containment is detected before the liquid or vapor phase of the hazardous substance stored in the UST tank is released into the environment. (Product Tight)
Violation Notes:	Returned to compliance on 11/05/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	05-22-2015
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Operations/Maintenance - General
Violation Notes:	Returned to compliance on 04/08/2016. Obtain spill kit to contain 180 gallons of product.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	23 CCR 16 2636(f) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)
Violation Description:	Failure to continuously monitor the interstitial space of the tank, piping and/or sumps sump such that the leak detection activates an audible/visual alarm when a leak is detected.
Violation Notes:	Returned to compliance on 08/08/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-05-2018
Citation:	23 CCR 16 2632(c)(2)(B), 2634(d)(1)(a), 2636(f)(1) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2632(c)(2)(B), 2634(d)(1)(a), 2636(f)(1)
Violation Description:	Failure of the leak detection equipment to have an audible and visual alarm as required.
Violation Notes:	Returned to compliance on 07/10/2018.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-05-2018
Citation:	HSC 6.7 25290.1(e) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(e)
Violation Description:	Failure to maintain the interstitial space such that a breach in the primary or secondary containment is detected before the liquid or vapor phase of the hazardous substance stored in the UST tank is released into the environment, i.e., vapor, pressure, hydrostatic

EAGLE GLEN MOBIL (Continued) **S113142685**

(VPH) monitoring.
Violation Notes: Returned to compliance on 07/10/2018.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-07-2016
Citation: 23 CCR 16 2666(c) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2666(c)
Violation Description: Failure of the line leak detector (LLD) monitoring single-walled pressurized piping to shut down the pump when a leak is detected or when the LLD fails or is disconnected.
Violation Notes: Returned to compliance on 09/13/2017.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-07-2016
Citation: HSC 6.7 25290.1(c)(3), 25290.2(c)(3) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(c)(3), 25290.2(c)(3)
Violation Description: Failure to keep water out of the secondary containment of UST systems installed on or after July 1, 2003 and before July 1, 2004, or on or after July 1, 2004.
Violation Notes: Returned to compliance on 11/02/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-07-2016
Citation: HSC 6.7 25292.1(a) - California Health and Safety Code, Chapter 6.7, Section(s) 25292.1(a)
Violation Description: Failure to operate the UST system to prevent unauthorized releases including leaks, spills, and/or overfills.
Violation Notes: Returned to compliance on 11/02/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 06-26-2014
Citation: HSC 6.7 25290.1(e) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(e)
Violation Description: Failure to maintain the interstitial space under constant vacuum, pressure, or hydrostatic such that a breach in the primary or secondary containment is detected before the liquid or vapor phase of the hazardous substance stored in the UST tank is released into the environment. (Product Tight)
Violation Notes: Returned to compliance on 07/10/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: UST

EAGLE GLEN MOBIL (Continued) **S113142685**

Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-09-2015
Citation: 23 CCR 16 2636(f)(5) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)(5)
Violation Description: Failure to maintain all product piping outside the dispenser to be fail-safe and shut down the pump when a leak is detected and the monitoring system shuts down the pump or flow restriction occurs when a leak is detected in the under dispenser containment.
Violation Notes: Returned to compliance on 08/08/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-06-2017
Citation: HSC 6.7 25281.5(b)(3) - California Health and Safety Code, Chapter 6.7, Section(s) 25281.5(b)(3)
Violation Description: Failure to meet one or more exemption requirements for emergency generator tank system unburied fuel piping: Conduct daily visual inspections each time the tank is operated. Conduct daily visual inspections at least monthly. Maintain a log of inspection results for review by the CUPA.
Violation Notes: Returned to compliance on 09/13/2017.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-07-2016
Citation: 40 CFR 1 265.171 - U.S. Code of Federal Regulations, Title 40, Chapter 1, Section(s) 265.171
Violation Description: Failure to accumulate hazardous waste in a container that is in good condition.
Violation Notes: Returned to compliance on 09/13/2017.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-04-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-08-2018
Violations Found: Yes
Eval Type: Routine done by local agency

EAGLE GLEN MOBIL (Continued) **S113142685**

Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-06-2017
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-07-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-07-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 09-13-2013
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-26-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-05-2018
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST

EAGLE GLEN MOBIL (Continued) **S113142685**

Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-09-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 07-13-2018
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 11-03-2015
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 05-22-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 06-26-2014
Violations Found: Yes
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-30-2015
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Eagle Glen Mobil File Review/ Inspection
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown

EAGLE GLEN MOBIL (Continued) **S113142685**

Eval Date: 07-24-2013
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 09-30-2015
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 11-02-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Enforcement Action:
Site ID: 391913
Site Name: Eagle Glen Mobil
Site Address: 2261 EAGLE GLEN PKWY
Site City: CORONA
Site Zip: 92883
Enf Action Date: 05-22-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Corona Fire Department
Enf Action Program: HMRRP
Enf Action Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Site Address: 2261 EAGLE GLEN PKWY
Site City: CORONA
Site Zip: 92883
Enf Action Date: 06-26-2014
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Riverside County Department of Env Health
Enf Action Program: UST
Enf Action Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Site Address: 2261 EAGLE GLEN PKWY
Site City: CORONA

EAGLE GLEN MOBIL (Continued) **S113142685**

Site Zip:	92883
Enf Action Date:	07-09-2015
Enf Action Type:	Notice of Violation (Unified Program)
Enf Action Description:	Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:	Not reported
Enf Action Division:	Riverside County Department of Env Health
Enf Action Program:	UST
Enf Action Source:	CERS

Coordinates:

Site ID:	391913
Facility Name:	Eagle Glen Mobil
Env Int Type Code:	HMBP
Program ID:	10404193
Coord Name:	Not reported
Ref Point Type Desc:	Center of a facility or station.
Latitude:	33.821500
Longitude:	-117.521740

Affiliation:

Affiliation Type Desc:	Legal Owner
Entity Name:	EMAD WASIF
Entity Title:	Not reported
Affiliation Address:	2261 Eagle Glen Pkwy
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92883
Affiliation Phone:	(951) 520-1990

Affiliation Type Desc:	Environmental Contact
Entity Name:	EMAD WASIF
Entity Title:	Not reported
Affiliation Address:	2261 Eagle Glen Pkwy
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92883
Affiliation Phone:	Not reported

Affiliation Type Desc:	Identification Signer
Entity Name:	EMAD WASIF
Entity Title:	OWNER / OPERATOR
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Operator
Entity Name:	EMAD WASIF
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported

EAGLE GLEN MOBIL (Continued) **S113142685**

Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(951) 316-1096
Affiliation Type Desc:	Parent Corporation
Entity Name:	EAGLE GLEN MOBIL
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	2261 Eagle Glen Pkwy
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92883
Affiliation Phone:	Not reported
Affiliation Type Desc:	Property Owner
Entity Name:	EAGLE GLEN MOBIL
Entity Title:	Not reported
Affiliation Address:	2261 Eagle Glen Pkwy
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92883
Affiliation Phone:	(951) 520-1990
Affiliation Type Desc:	UST Permit Applicant
Entity Name:	EMAD WASIF
Entity Title:	OWNER / OPERATOR
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(951) 520-1990
Affiliation Type Desc:	UST Property Owner Name
Entity Name:	EAGLE GLEN MOBIL
Entity Title:	Not reported

EAGLE GLEN MOBIL (Continued) **S113142685**

Affiliation Address: 2261 EAGLE GLEN PKWY
Affiliation City: CORONA
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 92883
Affiliation Phone: (951) 520-1990

Affiliation Type Desc: UST Tank Operator
Entity Name: EMAD WASIF
Entity Title: Not reported
Affiliation Address: 2261 EAGLE GLEN PKWY
Affiliation City: CORONA
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 92883
Affiliation Phone: (951) 520-1990

Affiliation Type Desc: Document Preparer
Entity Name: Dianne Fowler
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: UST Tank Owner
Entity Name: EAGLE GLEN MOBIL
Entity Title: Not reported
Affiliation Address: 2261 EAGLE GLEN PKWY
Affiliation City: CORONA
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 92883
Affiliation Phone: (951) 520-1990

CERS TANKS:
Facility Name: EAGLE GLEN MOBIL
Site ID: 391913
CERS ID: 10404193
CERS Description: Underground Storage Tank

Violations:
Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-07-2016
Citation: 23 CCR 16 2631(g), 2632(c)(2)(A) & (B) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2631(g), 2632(c)(2)(A) & (B)
Violation Description: Failure of the double-walled interstitial space of the tank to be continuously monitored with an audible and visual alarm.
Violation Notes: Returned to compliance on 11/02/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

EAGLE GLEN MOBIL (Continued) **S113142685**

Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	23 CCR 16 2638 - California Code of Regulations, Title 23, Chapter 16, Section(s) 2638
Violation Description:	Failure to test leak detection equipment as required every 12 months (VPH, sensor, LLD, ATG, etc.) and/or submit monitoring system certification to the CUPA within 30 days of completion of the test
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS

Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	23 CCR 16 2636(f)(1) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)(1)
Violation Description:	Failure of the double wall pressurized piping in the turbine sump to be continuously monitored with a system that activates an audible and visual alarm or restricts or stops flow at dispenser when a leak is detected.
Violation Notes:	Returned to compliance on 11/05/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS

Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-06-2017
Citation:	HSC 6.7 25290.2(d) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.2(d)
Violation Description:	Failure of a UST system installed on or after July 1, 2003 and before July 1, 2004 to be designed and constructed with a monitoring system capable of detecting the entry of the hazardous substance stored in the primary containment into the secondary containment and capable of detecting water intrusion into the secondary containment.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS

Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	05-22-2015
Citation:	HSC 6.95 25505(a)(4) - California Health and Safety Code, Chapter 6.95, Section(s) 25505(a)(4)
Violation Description:	Failure to provide initial and annual training to all employees in safety procedures in the event of a release or threatened release of a hazardous material or failure to document and maintain training records for a minimum of three years.
Violation Notes:	Returned to compliance on 04/08/2016. Provide annual employee training documents.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS

EAGLE GLEN MOBIL (Continued) **S113142685**

Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016
Citation:	HSC 6.7 25290.1(d) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(d)
Violation Description:	Failure of a UST system installed on or after July 1, 2004 to be designed and constructed with a monitoring system capable of detecting the entry of the liquid or vapor-phase of the hazardous substance stored in the primary containment into the secondary containment and capable of detecting water intrusion into the secondary containment.
Violation Notes:	Returned to compliance on 11/02/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS

Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-06-2017
Citation:	HSC 6.7 25290.1(d) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(d)
Violation Description:	Failure of a UST system installed on or after July 1, 2004 to be designed and constructed with a monitoring system capable of detecting the entry of the liquid or vapor-phase of the hazardous substance stored in the primary containment into the secondary containment and capable of detecting water intrusion into the secondary containment.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS

Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	HSC 6.7 25291 - California Health and Safety Code, Chapter 6.7, Section(s) 25291
Violation Description:	Failure to maintain under-dispenser containment, sumps, and/or other secondary containment in good condition and/or free of debris/liquid.
Violation Notes:	Returned to compliance on 08/08/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS

Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016
Citation:	23 CCR 16 2636(f)(2) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)(2)
Violation Description:	Failure of the line leak detector (LLD) monitoring pressurized piping to meet one or more of the following requirements:Monitor at least hourly.Be capable of detecting a release of 3.0 gallons per hour at 10 p.s.i.g. Restrict or shut off the flow of product through the piping when a leak is detected.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS

EAGLE GLEN MOBIL (Continued) **S113142685**

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 05-22-2015
Citation: HSC 6.95 25504(a) - California Health and Safety Code, Chapter 6.95, Section(s) 25504(a)
Violation Description: Failure to complete and/or submit hazardous material inventory forms for all reportable hazardous materials on site.
Violation Notes: Returned to compliance on 04/08/2016. Add 180 gallon waste oil tank.
Violation Division: Corona Fire Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 06-26-2014
Citation: HSC 6.7 25291 - California Health and Safety Code, Chapter 6.7, Section(s) 25291
Violation Description: Failure to maintain under-dispenser containment, sumps, and/or other secondary containment in good condition and/or free of debris/liquid.
Violation Notes: Returned to compliance on 07/10/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-09-2015
Citation: 23 CCR 16 2665 - California Code of Regulations, Title 23, Chapter 16, Section(s) 2665
Violation Description: Failure of the overfill prevention system to meet one of the following requirements: 1. Alert the transfer operator when the tank is 90 percent full by restricting the flow into the tank or triggering an audible and visual alarm; or 2. Restrict delivery of flow to the tank at least 30 minutes before the tank overfills, provided the restriction occurs when the tank is filled to no more than 95 percent of capacity; and activate an audible alarm at least five minutes before the tank overfills; or 3. Provide positive shut-off of flow to the tank when the tank is filled to no more than 95 percent of capacity; or 4. Provide positive shut-off of flow to the tank so that none of the fittings located on the top of the tank are exposed to product due to overfilling.
Violation Notes: Returned to compliance on 11/05/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 06-08-2018
Citation: Un-Specified
Violation Description: Business Plan Program - Operations/Maintenance - General Local Ordinance
Violation Notes: Spill kit is missing
Violation Division: Corona Fire Department
Violation Program: HMRRP
Violation Source: CERS

EAGLE GLEN MOBIL (Continued) **S113142685**

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-09-2015
Citation: HSC 6.7 25284.2 - California Health and Safety Code, Chapter 6.7, Section(s) 25284.2
Violation Description: Failure to test the spill bucket annually.
Violation Notes: Returned to compliance on 09/13/2017.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-09-2015
Citation: HSC 6.7 25290.1(e) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(e)
Violation Description: Failure to maintain the interstitial space under constant vacuum, pressure, or hydrostatic such that a breach in the primary or secondary containment is detected before the liquid or vapor phase of the hazardous substance stored in the UST tank is released into the environment. (Product Tight)
Violation Notes: Returned to compliance on 11/05/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 05-22-2015
Citation: HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description: Business Plan Program - Operations/Maintenance - General
Violation Notes: Returned to compliance on 04/08/2016. Obtain spill kit to contain 180 gallons of product.
Violation Division: Corona Fire Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-09-2015
Citation: 23 CCR 16 2636(f) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)
Violation Description: Failure to continuously monitor the interstitial space of the tank, piping and/or sumps sump such that the leak detection activates an audible/visual alarm when a leak is detected.
Violation Notes: Returned to compliance on 08/08/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-05-2018
Citation: 23 CCR 16 2632(c)(2)(B), 2634(d)(1)(a), 2636(f)(1) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2632(c)(2)(B), 2634(d)(1)(a), 2636(f)(1)

EAGLE GLEN MOBIL (Continued) **S113142685**

Violation Description:	Failure of the leak detection equipment to have an audible and visual alarm as required.
Violation Notes:	Returned to compliance on 07/10/2018.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-05-2018
Citation:	HSC 6.7 25290.1(e) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(e)
Violation Description:	Failure to maintain the interstitial space such that a breach in the primary or secondary containment is detected before the liquid or vapor phase of the hazardous substance stored in the UST tank is released into the environment, i.e., vapor, pressure, hydrostatic (VPH) monitoring.
Violation Notes:	Returned to compliance on 07/10/2018.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016
Citation:	23 CCR 16 2666(c) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2666(c)
Violation Description:	Failure of the line leak detector (LLD) monitoring single-walled pressurized piping to shut down the pump when a leak is detected or when the LLD fails or is disconnected.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016
Citation:	HSC 6.7 25290.1(c)(3), 25290.2(c)(3) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(c)(3), 25290.2(c)(3)
Violation Description:	Failure to keep water out of the secondary containment of UST systems installed on or after July 1, 2003 and before July 1, 2004, or on or after July 1, 2004.
Violation Notes:	Returned to compliance on 11/02/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016
Citation:	HSC 6.7 25292.1(a) - California Health and Safety Code, Chapter 6.7, Section(s) 25292.1(a)
Violation Description:	Failure to operate the UST system to prevent unauthorized releases including leaks, spills, and/or overfills.
Violation Notes:	Returned to compliance on 11/02/2016.
Violation Division:	Riverside County Department of Env Health

EAGLE GLEN MOBIL (Continued) **S113142685**

Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 06-26-2014
Citation: HSC 6.7 25290.1(e) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(e)
Violation Description: Failure to maintain the interstitial space under constant vacuum, pressure, or hydrostatic such that a breach in the primary or secondary containment is detected before the liquid or vapor phase of the hazardous substance stored in the UST tank is released into the environment. (Product Tight)
Violation Notes: Returned to compliance on 07/10/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-09-2015
Citation: 23 CCR 16 2636(f)(5) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)(5)
Violation Description: Failure to maintain all product piping outside the dispenser to be fail-safe and shut down the pump when a leak is detected and the monitoring system shuts down the pump or flow restriction occurs when a leak is detected in the under dispenser containment.
Violation Notes: Returned to compliance on 08/08/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-06-2017
Citation: HSC 6.7 25281.5(b)(3) - California Health and Safety Code, Chapter 6.7, Section(s) 25281.5(b)(3)
Violation Description: Failure to meet one or more exemption requirements for emergency generator tank system unburied fuel piping: Conduct daily visual inspections each time the tank is operated. Conduct daily visual inspections at least monthly. Maintain a log of inspection results for review by the CUPA.
Violation Notes: Returned to compliance on 09/13/2017.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-07-2016
Citation: 40 CFR 1 265.171 - U.S. Code of Federal Regulations, Title 40, Chapter 1, Section(s) 265.171
Violation Description: Failure to accumulate hazardous waste in a container that is in good condition.
Violation Notes: Returned to compliance on 09/13/2017.
Violation Division: Riverside County Department of Env Health
Violation Program: HW

EAGLE GLEN MOBIL (Continued) **S113142685**

Violation Source: CERS

Evaluation:

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-04-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-08-2018
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-06-2017
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-07-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-07-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 09-13-2013
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

EAGLE GLEN MOBIL (Continued) **S113142685**

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-26-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-05-2018
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-09-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 07-13-2018
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 11-03-2015
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 05-22-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 06-26-2014
Violations Found: Yes

EAGLE GLEN MOBIL (Continued) **S113142685**

Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-30-2015
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Eagle Glen Mobil File Review/ Inspection
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 07-24-2013
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 09-30-2015
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 11-02-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Enforcement Action:
Site ID: 391913
Site Name: Eagle Glen Mobil
Site Address: 2261 EAGLE GLEN PKWY
Site City: CORONA
Site Zip: 92883
Enf Action Date: 05-22-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Corona Fire Department
Enf Action Program: HMRRP
Enf Action Source: CERS

Site ID: 391913

EAGLE GLEN MOBIL (Continued) **S113142685**

Site Name:	Eagle Glen Mobil
Site Address:	2261 EAGLE GLEN PKWY
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	06-26-2014
Enf Action Type:	Notice of Violation (Unified Program)
Enf Action Description:	Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:	Not reported
Enf Action Division:	Riverside County Department of Env Health
Enf Action Program:	UST
Enf Action Source:	CERS

Site ID:	391913
Site Name:	Eagle Glen Mobil
Site Address:	2261 EAGLE GLEN PKWY
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	07-09-2015
Enf Action Type:	Notice of Violation (Unified Program)
Enf Action Description:	Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:	Not reported
Enf Action Division:	Riverside County Department of Env Health
Enf Action Program:	UST
Enf Action Source:	CERS

Coordinates:

Site ID:	391913
Facility Name:	Eagle Glen Mobil
Env Int Type Code:	HMBP
Program ID:	10404193
Coord Name:	Not reported
Ref Point Type Desc:	Center of a facility or station.
Latitude:	33.821500
Longitude:	-117.521740

Affiliation:

Affiliation Type Desc:	Legal Owner
Entity Name:	EMAD WASIF
Entity Title:	Not reported
Affiliation Address:	2261 Eagle Glen Pkwy
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92883
Affiliation Phone:	(951) 520-1990

Affiliation Type Desc:	Environmental Contact
Entity Name:	EMAD WASIF
Entity Title:	Not reported
Affiliation Address:	2261 Eagle Glen Pkwy
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92883
Affiliation Phone:	Not reported

EAGLE GLEN MOBIL (Continued) **S113142685**

Affiliation Type Desc:	Identification Signer
Entity Name:	EMAD WASIF
Entity Title:	OWNER / OPERATOR
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Operator
Entity Name:	EMAD WASIF
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(951) 316-1096

Affiliation Type Desc:	Parent Corporation
Entity Name:	EAGLE GLEN MOBIL
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	2261 Eagle Glen Pkwy
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92883
Affiliation Phone:	Not reported

Affiliation Type Desc:	Property Owner
Entity Name:	EAGLE GLEN MOBIL
Entity Title:	Not reported
Affiliation Address:	2261 Eagle Glen Pkwy
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	United States

EAGLE GLEN MOBIL (Continued) **S113142685**

Affiliation Zip: 92883
Affiliation Phone: (951) 520-1990

Affiliation Type Desc: UST Permit Applicant
Entity Name: EMAD WASIF
Entity Title: OWNER / OPERATOR
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (951) 520-1990

Affiliation Type Desc: UST Property Owner Name
Entity Name: EAGLE GLEN MOBIL
Entity Title: Not reported
Affiliation Address: 2261 EAGLE GLEN PKWY
Affiliation City: CORONA
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 92883
Affiliation Phone: (951) 520-1990

Affiliation Type Desc: UST Tank Operator
Entity Name: EMAD WASIF
Entity Title: Not reported
Affiliation Address: 2261 EAGLE GLEN PKWY
Affiliation City: CORONA
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 92883
Affiliation Phone: (951) 520-1990

Affiliation Type Desc: Document Preparer
Entity Name: Dianne Fowler
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: UST Tank Owner
Entity Name: EAGLE GLEN MOBIL
Entity Title: Not reported
Affiliation Address: 2261 EAGLE GLEN PKWY
Affiliation City: CORONA
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 92883
Affiliation Phone: (951) 520-1990

HAZNET:
Site Name: EAGLE GLEN MOBIL
Year: 2017

EAGLE GLEN MOBIL (Continued) **S113142685**

GEPAID: CAL000307032
Contact: EMAD WASIF
Telephone: 9515201190
Mailing Name: Not reported
Mailing Address: 2261 EAGLE GLEN PKWY
Mailing City,St,Zip: CORONA, CA 928830785
Gen County: Riverside
TSD EPA ID: CAT080013352
TSD County: Los Angeles
Tons: 0.462
CA Waste Code: 135-Unspecified aqueous solution
Method: H039-Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Facility County: Riverside

Site Name: EAGLE GLEN MOBIL
Year: 2008
GEPAID: CAL000307032
Contact: EMAD A. WASIF
Telephone: 9515201190
Mailing Name: Not reported
Mailing Address: 2261 EAGLE GLEN PKWY
Mailing City,St,Zip: CORONA, CA 928830785
Gen County: Riverside
TSD EPA ID: CAT080013352
TSD County: Los Angeles
Tons: 0.02085
CA Waste Code: 223-Unspecified oil-containing waste
Method: H039-Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Facility County: Riverside

Site Name: EAGLE GLEN MOBIL
Year: 2007
GEPAID: CAL000307032
Contact: EMAD A. WASIF
Telephone: 9515201190
Mailing Name: Not reported
Mailing Address: 2261 EAGLE GLEN PKWY
Mailing City,St,Zip: CORONA, CA 928830785
Gen County: Riverside
TSD EPA ID: CAD008252405
TSD County: Los Angeles
Tons: 0.03
CA Waste Code: 352-Other organic solids
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Riverside

CERS TANKS:
Site ID: 391913
CERS ID: 10404193
Site Name: EAGLE GLEN MOBIL
CERS Description: Chemical Storage Facilities

Violations:
Site ID: 391913

EAGLE GLEN MOBIL (Continued) **S113142685**

Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016
Citation:	23 CCR 16 2631(g), 2632(c)(2)(A) & (B) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2631(g), 2632(c)(2)(A) & (B)
Violation Description:	Failure of the double-walled interstitial space of the tank to be continuously monitored with an audible and visual alarm.
Violation Notes:	Returned to compliance on 11/02/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	23 CCR 16 2638 - California Code of Regulations, Title 23, Chapter 16, Section(s) 2638
Violation Description:	Failure to test leak detection equipment as required every 12 months (VPH, sensor, LLD, ATG, etc.) and/or submit monitoring system certification to the CUPA within 30 days of completion of the test
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	23 CCR 16 2636(f)(1) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)(1)
Violation Description:	Failure of the double wall pressurized piping in the turbine sump to be continuously monitored with a system that activates an audible and visual alarm or restricts or stops flow at dispenser when a leak is detected.
Violation Notes:	Returned to compliance on 11/05/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-06-2017
Citation:	HSC 6.7 25290.2(d) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.2(d)
Violation Description:	Failure of a UST system installed on or after July 1, 2003 and before July 1, 2004 to be designed and constructed with a monitoring system capable of detecting the entry of the hazardous substance stored in the primary containment into the secondary containment and capable of detecting water intrusion into the secondary containment.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	05-22-2015

EAGLE GLEN MOBIL (Continued) **S113142685**

Citation:	HSC 6.95 25505(a)(4) - California Health and Safety Code, Chapter 6.95, Section(s) 25505(a)(4)
Violation Description:	Failure to provide initial and annual training to all employees in safety procedures in the event of a release or threatened release of a hazardous material or failure to document and maintain training records for a minimum of three years.
Violation Notes:	Returned to compliance on 04/08/2016. Provide annual employee training documents.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016
Citation:	HSC 6.7 25290.1(d) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(d)
Violation Description:	Failure of a UST system installed on or after July 1, 2004 to be designed and constructed with a monitoring system capable of detecting the entry of the liquid or vapor-phase of the hazardous substance stored in the primary containment into the secondary containment and capable of detecting water intrusion into the secondary containment.
Violation Notes:	Returned to compliance on 11/02/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-06-2017
Citation:	HSC 6.7 25290.1(d) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(d)
Violation Description:	Failure of a UST system installed on or after July 1, 2004 to be designed and constructed with a monitoring system capable of detecting the entry of the liquid or vapor-phase of the hazardous substance stored in the primary containment into the secondary containment and capable of detecting water intrusion into the secondary containment.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	HSC 6.7 25291 - California Health and Safety Code, Chapter 6.7, Section(s) 25291
Violation Description:	Failure to maintain under-dispenser containment, sumps, and/or other secondary containment in good condition and/or free of debris/liquid.
Violation Notes:	Returned to compliance on 08/08/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016

EAGLE GLEN MOBIL (Continued) **S113142685**

Citation:	23 CCR 16 2636(f)(2) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)(2)
Violation Description:	Failure of the line leak detector (LLD) monitoring pressurized piping to meet one or more of the following requirements:Monitor at least hourly.Be capable of detecting a release of 3.0 gallons per hour at 10 p.s.i.g. Restrict or shut off the flow of product through the piping when a leak is detected.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	05-22-2015
Citation:	HSC 6.95 25504(a) - California Health and Safety Code, Chapter 6.95, Section(s) 25504(a)
Violation Description:	Failure to complete and/or submit hazardous material inventory forms for all reportable hazardous materials on site.
Violation Notes:	Returned to compliance on 04/08/2016. Add 180 gallon waste oil tank.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	06-26-2014
Citation:	HSC 6.7 25291 - California Health and Safety Code, Chapter 6.7, Section(s) 25291
Violation Description:	Failure to maintain under-dispenser containment, sumps, and/or other secondary containment in good condition and/or free of debris/liquid.
Violation Notes:	Returned to compliance on 07/10/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	23 CCR 16 2665 - California Code of Regulations, Title 23, Chapter 16, Section(s) 2665
Violation Description:	Failure of the overfill prevention system to meet one of the following requirements: 1. Alert the transfer operator when the tank is 90 percent full by restricting the flow into the tank or triggering an audible and visual alarm; or 2. Restrict delivery of flow to the tank at least 30 minutes before the tank overfills, provided the restriction occurs when the tank is filled to no more than 95 percent of capacity; and activate an audible alarm at least five minutes before the tank overfills; or 3. Provide positive shut-off of flow to the tank when the tank is filled to no more than 95 percent of capacity; or 4. Provide positive shut-off of flow to the tank so that none of the fittings located on the top of the tank are exposed to product due to overfilling.
Violation Notes:	Returned to compliance on 11/05/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS

EAGLE GLEN MOBIL (Continued) **S113142685**

Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	06-08-2018
Citation:	Un-Specified
Violation Description:	Business Plan Program - Operations/Maintenance - General Local Ordinance
Violation Notes:	Spill kit is missing
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS

Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	HSC 6.7 25284.2 - California Health and Safety Code, Chapter 6.7, Section(s) 25284.2
Violation Description:	Failure to test the spill bucket annually.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS

Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	HSC 6.7 25290.1(e) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(e)
Violation Description:	Failure to maintain the interstitial space under constant vacuum, pressure, or hydrostatic such that a breach in the primary or secondary containment is detected before the liquid or vapor phase of the hazardous substance stored in the UST tank is released into the environment. (Product Tight)
Violation Notes:	Returned to compliance on 11/05/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS

Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	05-22-2015
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Operations/Maintenance - General
Violation Notes:	Returned to compliance on 04/08/2016. Obtain spill kit to contain 180 gallons of product.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS

Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-09-2015
Citation:	23 CCR 16 2636(f) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)
Violation Description:	Failure to continuously monitor the interstitial space of the tank, piping and/or sumps sump such that the leak detection activates an audible/visual alarm when a leak is detected.

EAGLE GLEN MOBIL (Continued) **S113142685**

Violation Notes:	Returned to compliance on 08/08/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-05-2018
Citation:	23 CCR 16 2632(c)(2)(B), 2634(d)(1)(a), 2636(f)(1) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2632(c)(2)(B), 2634(d)(1)(a), 2636(f)(1)
Violation Description:	Failure of the leak detection equipment to have an audible and visual alarm as required.
Violation Notes:	Returned to compliance on 07/10/2018.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-05-2018
Citation:	HSC 6.7 25290.1(e) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(e)
Violation Description:	Failure to maintain the interstitial space such that a breach in the primary or secondary containment is detected before the liquid or vapor phase of the hazardous substance stored in the UST tank is released into the environment, i.e., vapor, pressure, hydrostatic (VPH) monitoring.
Violation Notes:	Returned to compliance on 07/10/2018.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016
Citation:	23 CCR 16 2666(c) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2666(c)
Violation Description:	Failure of the line leak detector (LLD) monitoring single-walled pressurized piping to shut down the pump when a leak is detected or when the LLD fails or is disconnected.
Violation Notes:	Returned to compliance on 09/13/2017.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	391913
Site Name:	Eagle Glen Mobil
Violation Date:	07-07-2016
Citation:	HSC 6.7 25290.1(c)(3), 25290.2(c)(3) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(c)(3), 25290.2(c)(3)
Violation Description:	Failure to keep water out of the secondary containment of UST systems installed on or after July 1, 2003 and before July 1, 2004, or on or after July 1, 2004.
Violation Notes:	Returned to compliance on 11/02/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST

EAGLE GLEN MOBIL (Continued) **S113142685**

Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-07-2016
Citation: HSC 6.7 25292.1(a) - California Health and Safety Code, Chapter 6.7, Section(s) 25292.1(a)
Violation Description: Failure to operate the UST system to prevent unauthorized releases including leaks, spills, and/or overfills.
Violation Notes: Returned to compliance on 11/02/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 06-26-2014
Citation: HSC 6.7 25290.1(e) - California Health and Safety Code, Chapter 6.7, Section(s) 25290.1(e)
Violation Description: Failure to maintain the interstitial space under constant vacuum, pressure, or hydrostatic such that a breach in the primary or secondary containment is detected before the liquid or vapor phase of the hazardous substance stored in the UST tank is released into the environment. (Product Tight)
Violation Notes: Returned to compliance on 07/10/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-09-2015
Citation: 23 CCR 16 2636(f)(5) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2636(f)(5)
Violation Description: Failure to maintain all product piping outside the dispenser to be fail-safe and shut down the pump when a leak is detected and the monitoring system shuts down the pump or flow restriction occurs when a leak is detected in the under dispenser containment.
Violation Notes: Returned to compliance on 08/08/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-06-2017
Citation: HSC 6.7 25281.5(b)(3) - California Health and Safety Code, Chapter 6.7, Section(s) 25281.5(b)(3)
Violation Description: Failure to meet one or more exemption requirements for emergency generator tank system unburied fuel piping: Conduct daily visual inspections each time the tank is operated. Conduct daily visual inspections at least monthly. Maintain a log of inspection results for review by the CUPA.
Violation Notes: Returned to compliance on 09/13/2017.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

EAGLE GLEN MOBIL (Continued) **S113142685**

Site ID: 391913
Site Name: Eagle Glen Mobil
Violation Date: 07-07-2016
Citation: 40 CFR 1 265.171 - U.S. Code of Federal Regulations, Title 40, Chapter 1, Section(s) 265.171
Violation Description: Failure to accumulate hazardous waste in a container that is in good condition.
Violation Notes: Returned to compliance on 09/13/2017.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-04-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-08-2018
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-06-2017
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-07-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-07-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

EAGLE GLEN MOBIL (Continued) **S113142685**

Eval General Type: Other/Unknown
Eval Date: 09-13-2013
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-26-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-05-2018
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-09-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 07-13-2018
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 11-03-2015
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 05-22-2015
Violations Found: Yes

EAGLE GLEN MOBIL (Continued) **S113142685**

Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 06-26-2014
Violations Found: Yes
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-30-2015
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Eagle Glen Mobil File Review/ Inspection
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 07-24-2013
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 09-30-2015
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 11-02-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Enforcement Action:
Site ID: 391913
Site Name: Eagle Glen Mobil
Site Address: 2261 EAGLE GLEN PKWY
Site City: CORONA
Site Zip: 92883

EAGLE GLEN MOBIL (Continued) **S113142685**

Enf Action Date: 05-22-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Corona Fire Department
Enf Action Program: HMRRP
Enf Action Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Site Address: 2261 EAGLE GLEN PKWY
Site City: CORONA
Site Zip: 92883
Enf Action Date: 06-26-2014
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Riverside County Department of Env Health
Enf Action Program: UST
Enf Action Source: CERS

Site ID: 391913
Site Name: Eagle Glen Mobil
Site Address: 2261 EAGLE GLEN PKWY
Site City: CORONA
Site Zip: 92883
Enf Action Date: 07-09-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Riverside County Department of Env Health
Enf Action Program: UST
Enf Action Source: CERS

Coordinates:
Site ID: 391913
Facility Name: Eagle Glen Mobil
Env Int Type Code: HMBP
Program ID: 10404193
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 33.821500
Longitude: -117.521740

Affiliation:
Affiliation Type Desc: Legal Owner
Entity Name: EMAD WASIF
Entity Title: Not reported
Affiliation Address: 2261 Eagle Glen Pkwy
Affiliation City: Corona
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 92883
Affiliation Phone: (951) 520-1990

Affiliation Type Desc: Environmental Contact

EAGLE GLEN MOBIL (Continued) **S113142685**

Entity Name:	EMAD WASIF
Entity Title:	Not reported
Affiliation Address:	2261 Eagle Glen Pkwy
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92883
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	EMAD WASIF
Entity Title:	OWNER / OPERATOR
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Operator
Entity Name:	EMAD WASIF
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(951) 316-1096
Affiliation Type Desc:	Parent Corporation
Entity Name:	EAGLE GLEN MOBIL
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	2261 Eagle Glen Pkwy
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92883

EAGLE GLEN MOBIL (Continued) **S113142685**

Affiliation Phone:	Not reported
Affiliation Type Desc:	Property Owner
Entity Name:	EAGLE GLEN MOBIL
Entity Title:	Not reported
Affiliation Address:	2261 Eagle Glen Pkwy
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92883
Affiliation Phone:	(951) 520-1990
Affiliation Type Desc:	UST Permit Applicant
Entity Name:	EMAD WASIF
Entity Title:	OWNER / OPERATOR
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(951) 520-1990
Affiliation Type Desc:	UST Property Owner Name
Entity Name:	EAGLE GLEN MOBIL
Entity Title:	Not reported
Affiliation Address:	2261 EAGLE GLEN PKWY
Affiliation City:	CORONA
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92883
Affiliation Phone:	(951) 520-1990
Affiliation Type Desc:	UST Tank Operator
Entity Name:	EMAD WASIF
Entity Title:	Not reported
Affiliation Address:	2261 EAGLE GLEN PKWY
Affiliation City:	CORONA
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92883
Affiliation Phone:	(951) 520-1990
Affiliation Type Desc:	Document Preparer
Entity Name:	Dianne Fowler
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	UST Tank Owner
Entity Name:	EAGLE GLEN MOBIL
Entity Title:	Not reported
Affiliation Address:	2261 EAGLE GLEN PKWY
Affiliation City:	CORONA

EAGLE GLEN MOBIL (Continued) **S113142685**

Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 92883
Affiliation Phone: (951) 520-1990

I31 **EAGLE GLEN MOBIL** **UST** **U004053273**
SSW **2261 EAGLE GLEN PKWY** **N/A**
1/8-1/4 **CORONA, CA 92883**
0.135 mi.
714 ft. **Site 2 of 2 in cluster I**

Relative:
Higher

Actual:
914 ft.

UST:
Facility ID: FA0024172
Permitting Agency: Riverside County Department of Environmental Health
Latitude: 33.8215
Longitude: -117.52174

RIVERSIDE CO. UST:
Region: RIVERSIDE
Total Tanks: 3

J32 **STATER BROS MARKETS #170** **RCRA-LQG** **1016954490**
WSW **2243 EAGLE GLEN PKWY** **CAL000334464**
1/8-1/4 **CORONA, CA 92883**
0.140 mi.
739 ft. **Site 1 of 4 in cluster J**

Relative:
Higher

Actual:
967 ft.

RCRA-LQG:
Date form received by agency: 03/01/2014
Facility name: STATER BROS MARKETS #170
Facility address: 2243 EAGLE GLEN PKWY
CORONA, CA 92883
EPA ID: CAL000334464
Mailing address: PO BOX 150
SAN BERNARDINO, CA 92402
Contact: CHERYL L SKALICKY
Contact address: PO BOX 150
SAN BERNARDINO, CA 92402
Contact country: Not reported
Contact telephone: 909-733-5288
Contact email: CHERYL.SKALICKY@STATERBROS.COM
EPA Region: 09
Classification: Large Quantity Generator
Description: Handler: generates 1,000 kg or more of hazardous waste during any calendar month; or generates more than 1 kg of acutely hazardous waste during any calendar month; or generates more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month; or generates 1 kg or less of acutely hazardous waste during any calendar month, and accumulates more than 1 kg of acutely hazardous waste at any time; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates more than 100 kg of that material at any time

STATER BROS MARKETS #170 (Continued) **1016954490**

Owner/Operator Summary:

Owner/operator name:	STATER BROS. MARKETS
Owner/operator address:	Not reported
	Not reported
Owner/operator country:	Not reported
Owner/operator telephone:	Not reported
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	06/04/2003
Owner/Op end date:	Not reported

Owner/operator name:	STATER BROS MARKETS
Owner/operator address:	S TIPPECANOE AVE
	SAN BERNARDINO, CA 92408
Owner/operator country:	Not reported
Owner/operator telephone:	909-733-5000
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	06/04/2003
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

. Waste code:	P001
. Waste name:	2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

Violation Status: No violations found

J33 **STATER BROS MARKETS 170** **CERS HAZ WASTE** **S113466825**
WSW **2243 EAGLE GLEN PKWY** **HAZNET** **N/A**
1/8-1/4 **CORONA, CA 92883** **CERS**
0.140 mi.
739 ft. **Site 2 of 4 in cluster J**

Relative:
Higher

Actual:
967 ft.

CERS HAZ WASTE:
Site ID: 71282
CERS ID: 10553110
CERS Description: Hazardous Waste Generator

Violations:
Site ID: 71282
Site Name: Stater Bros Markets 170
Violation Date: 09-23-2016
Citation: 22 CCR 12 66262.40(a) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.40(a)
Violation Description: Failure to keep a copy of each properly signed manifest for at least three years from the date the waste was accepted by the initial transporter. The manifest signed at the time the waste was accepted for transport shall be kept until receiving a signed copy from the designated facility which received the waste.
Violation Notes: Returned to compliance on 11/10/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Site ID: 71282
Site Name: Stater Bros Markets 170
Violation Date: 09-23-2016
Citation: 22 CCR 12 66262.34(d) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(d)
Violation Description: Failure to send hazardous waste offsite for treatment, storage, or disposal within 180 days (or 270 days if waste is transported over 200 miles) for a generator who generates less than 1000 kilogram per month if all of the following conditions are met: (1) The quantity of hazardous waste accumulated onsite never exceeds 6,000 kilograms. (2) The generator complies with the requirements of 40 Code of Federal Regulations section 262.34(d), (e) and (f). (3) The generator does not hold acutely hazardous waste or extremely hazardous waste in an amount greater than one kilogram for more than 90 days.
Violation Notes: Returned to compliance on 11/10/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Site ID: 71282
Site Name: Stater Bros Markets 170
Violation Date: 10-13-2016
Citation: HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description: Business Plan Program - Operations/Maintenance - General
Violation Notes: Returned to compliance on 11/10/2016. 104B - Post emergency numbers (found in CERS Emergency Response Plan) in conspicuous location. Make sure the font size is large.
Violation Division: Corona Fire Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 71282

STATER BROS MARKETS 170 (Continued) **S113466825**

Site Name:	Stater Bros Markets 170
Violation Date:	10-13-2016
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Administration/Documentation - General
Violation Notes:	Returned to compliance on 11/10/2016. 104A ? Post NFPA placards, see attached page 2 of 2
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	71282
Site Name:	Stater Bros Markets 170
Violation Date:	10-13-2016
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Operations/Maintenance - General
Violation Notes:	Returned to compliance on 11/10/2016. 104D - Obtain Safety Data Sheet and make it available to employees.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	71282
Site Name:	Stater Bros Markets 170
Violation Date:	09-23-2016
Citation:	22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description:	Failure to properly label hazardous waste accumulation containers and portable tanks with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.
Violation Notes:	Returned to compliance on 11/10/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS
Site ID:	71282
Site Name:	Stater Bros Markets 170
Violation Date:	10-13-2016
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Operations/Maintenance - General
Violation Notes:	Returned to compliance on 11/10/2016. 104C -Replace "Compressed Gas Storage" sign at gas storage room.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	71282
Site Name:	Stater Bros Markets 170
Violation Date:	10-13-2016
Citation:	HSC 6.95 25505(a)(4) - California Health and Safety Code, Chapter 6.95, Section(s) 25505(a)(4)
Violation Description:	Failure to provide initial and annual training to all employees in safety procedures in the event of a release or threatened release of a

STATER BROS MARKETS 170 (Continued) **S113466825**

	hazardous material or failure to document and maintain training records for a minimum of three years.
Violation Notes:	Returned to compliance on 11/10/2016. Provide training (Hazmat) for employees within 15 days and document it, send signed sheets(s) to: ab@ggcorp.net
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	09-23-2016
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Riverside County Department of Env Health
Eval Program:	HW
Eval Source:	CERS

Eval General Type:	Other/Unknown
Eval Date:	11-10-2016
Violations Found:	No
Eval Type:	Other, not routine, done by local agency
Eval Notes:	Not reported
Eval Division:	Corona Fire Department
Eval Program:	HMRRP
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	10-13-2016
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Corona Fire Department
Eval Program:	HMRRP
Eval Source:	CERS

Coordinates:

Site ID:	71282
Facility Name:	Stater Bros Markets 170
Env Int Type Code:	HWG
Program ID:	10553110
Coord Name:	Not reported
Ref Point Type Desc:	Center of a facility or station.
Latitude:	33.822620
Longitude:	-117.523120

Affiliation:

Affiliation Type Desc:	Operator
Entity Name:	Stater Bros. Markets 170
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported

STATER BROS MARKETS 170 (Continued) **S113466825**

Affiliation Phone:	(909) 733-5000
Affiliation Type Desc:	Parent Corporation
Entity Name:	Stater Bros. Markets
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Document Preparer
Entity Name:	Steven Toscano
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	2243 Eagle Glen Parkway
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92408
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	Stater Bros. Markets
Entity Title:	Not reported
Affiliation Address:	P.O. Box 150
Affiliation City:	San Bernardino
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92408
Affiliation Phone:	(909) 733-5000
Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055
Affiliation Type Desc:	Environmental Contact
Entity Name:	Steven Toscano
Entity Title:	Not reported
Affiliation Address:	P.O. Box 150
Affiliation City:	San Bernardino

STATER BROS MARKETS 170 (Continued) **S113466825**

Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92408
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Steven Toscano
Entity Title:	Supervisor of Support Services
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Property Owner
Entity Name:	Stater Bros.Markets
Entity Title:	Not reported
Affiliation Address:	P.O. Box 150
Affiliation City:	San Bernardino
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92408
Affiliation Phone:	(909) 733-5000

HAZNET:

Site Name:	STATER BROS MARKETS # 170
Year:	2017
GEPAID:	CAL000334464
Contact:	CHERYL SKALICKY
Telephone:	9097335288
Mailing Name:	Not reported
Mailing Address:	PO BOX 150
Mailing City,St,Zip:	SAN BERNARDINO, CA 924020000
Gen County:	Riverside
TSD EPA ID:	CAD044429835
TSD County:	Los Angeles
Tons:	0.0025
CA Waste Code:	311-Pharmaceutical waste
Method:	H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	Riverside
Site Name:	STATER BROS MARKETS # 170
Year:	2015
GEPAID:	CAL000334464
Contact:	CHERYL SKALICKY
Telephone:	9097335288
Mailing Name:	Not reported
Mailing Address:	PO BOX 150
Mailing City,St,Zip:	SAN BERNARDINO, CA 924020000
Gen County:	Riverside
TSD EPA ID:	CAD028409019
TSD County:	Los Angeles
Tons:	0.005
CA Waste Code:	311-Pharmaceutical waste

STATER BROS MARKETS 170 (Continued) **S113466825**

Method:	H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	Riverside
Site Name:	STATER BROS MARKETS # 170
Year:	2015
GEPAID:	CAL000334464
Contact:	CHERYL SKALICKY
Telephone:	9097335288
Mailing Name:	Not reported
Mailing Address:	PO BOX 150
Mailing City,St,Zip:	SAN BERNARDINO, CA 924020000
Gen County:	Riverside
TSD EPA ID:	AZR000515924
TSD County:	99
Tons:	0.0125
CA Waste Code:	352-Other organic solids
Method:	H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	Riverside
Site Name:	STATER BROS MARKETS # 170
Year:	2014
GEPAID:	CAL000334464
Contact:	CHERYL SKALICKY
Telephone:	9097335288
Mailing Name:	Not reported
Mailing Address:	PO BOX 150
Mailing City,St,Zip:	SAN BERNARDINO, CA 924020000
Gen County:	Riverside
TSD EPA ID:	CAD028409019
TSD County:	Los Angeles
Tons:	0.005
CA Waste Code:	311-Pharmaceutical waste
Method:	H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	Riverside
Site Name:	STATER BROS MARKETS # 170
Year:	2013
GEPAID:	CAL000334464
Contact:	CHERYL SKALICKY
Telephone:	9097335288
Mailing Name:	Not reported
Mailing Address:	PO BOX 150
Mailing City,St,Zip:	SAN BERNARDINO, CA 924020000
Gen County:	Riverside
TSD EPA ID:	CAD028409019
TSD County:	Los Angeles
Tons:	0.005
CA Waste Code:	311-Pharmaceutical waste
Method:	H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	Riverside

STATER BROS MARKETS 170 (Continued) **S113466825**

Click this hyperlink while viewing on your computer to access
2 additional CA_HAZNET: record(s) in the EDR Site Report.

CERS TANKS:

Site ID:	71282
CERS ID:	10553110
Site Name:	STATER BROS MARKETS 170
CERS Description:	Chemical Storage Facilities

Violations:

Site ID:	71282
Site Name:	Stater Bros Markets 170
Violation Date:	09-23-2016
Citation:	22 CCR 12 66262.40(a) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.40(a)
Violation Description:	Failure to keep a copy of each properly signed manifest for at least three years from the date the waste was accepted by the initial transporter. The manifest signed at the time the waste was accepted for transport shall be kept until receiving a signed copy from the designated facility which received the waste.
Violation Notes:	Returned to compliance on 11/10/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS

Site ID:	71282
Site Name:	Stater Bros Markets 170
Violation Date:	09-23-2016
Citation:	22 CCR 12 66262.34(d) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(d)
Violation Description:	Failure to send hazardous waste offsite for treatment, storage, or disposal within 180 days (or 270 days if waste is transported over 200 miles) for a generator who generates less than 1000 kilogram per month if all of the following conditions are met: (1) The quantity of hazardous waste accumulated onsite never exceeds 6,000 kilograms. (2) The generator complies with the requirements of 40 Code of Federal Regulations section 262.34(d), (e) and (f). (3) The generator does not hold acutely hazardous waste or extremely hazardous waste in an amount greater than one kilogram for more than 90 days.
Violation Notes:	Returned to compliance on 11/10/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS

Site ID:	71282
Site Name:	Stater Bros Markets 170
Violation Date:	10-13-2016
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Operations/Maintenance - General
Violation Notes:	Returned to compliance on 11/10/2016. 104B - Post emergency numbers (found in CERS Emergency Response Plan) in conspicuous location. Make sure the font size is large.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS

STATER BROS MARKETS 170 (Continued) **S113466825**

Site ID:	71282
Site Name:	Stater Bros Markets 170
Violation Date:	10-13-2016
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Administration/Documentation - General
Violation Notes:	Returned to compliance on 11/10/2016. 104A ? Post NFPA placards, see attached page 2 of 2
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS

Site ID:	71282
Site Name:	Stater Bros Markets 170
Violation Date:	10-13-2016
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Operations/Maintenance - General
Violation Notes:	Returned to compliance on 11/10/2016. 104D - Obtain Safety Data Sheet and make it available to employees.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS

Site ID:	71282
Site Name:	Stater Bros Markets 170
Violation Date:	09-23-2016
Citation:	22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description:	Failure to properly label hazardous waste accumulation containers and portable tanks with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.
Violation Notes:	Returned to compliance on 11/10/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS

Site ID:	71282
Site Name:	Stater Bros Markets 170
Violation Date:	10-13-2016
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Operations/Maintenance - General
Violation Notes:	Returned to compliance on 11/10/2016. 104C -Replace "Compressed Gas Storage" sign at gas storage room.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS

Site ID:	71282
Site Name:	Stater Bros Markets 170
Violation Date:	10-13-2016
Citation:	HSC 6.95 25505(a)(4) - California Health and Safety Code, Chapter 6.95, Section(s) 25505(a)(4)
Violation Description:	Failure to provide initial and annual training to all employees in

STATER BROS MARKETS 170 (Continued) **S113466825**

	safety procedures in the event of a release or threatened release of a hazardous material or failure to document and maintain training records for a minimum of three years.
Violation Notes:	Returned to compliance on 11/10/2016. Provide training (Hazmat) for employees within 15 days and document it, send signed sheets(s) to: ab@ggcorp.net
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	09-23-2016
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Riverside County Department of Env Health
Eval Program:	HW
Eval Source:	CERS

Eval General Type:	Other/Unknown
Eval Date:	11-10-2016
Violations Found:	No
Eval Type:	Other, not routine, done by local agency
Eval Notes:	Not reported
Eval Division:	Corona Fire Department
Eval Program:	HMRRP
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	10-13-2016
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Corona Fire Department
Eval Program:	HMRRP
Eval Source:	CERS

Coordinates:

Site ID:	71282
Facility Name:	Stater Bros Markets 170
Env Int Type Code:	HWG
Program ID:	10553110
Coord Name:	Not reported
Ref Point Type Desc:	Center of a facility or station.
Latitude:	33.822620
Longitude:	-117.523120

Affiliation:

Affiliation Type Desc:	Operator
Entity Name:	Stater Bros. Markets 170
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported

STATER BROS MARKETS 170 (Continued) **S113466825**

Affiliation Zip:	Not reported
Affiliation Phone:	(909) 733-5000
Affiliation Type Desc:	Parent Corporation
Entity Name:	Stater Bros. Markets
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Document Preparer
Entity Name:	Steven Toscano
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	2243 Eagle Glen Parkway
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92408
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	Stater Bros. Markets
Entity Title:	Not reported
Affiliation Address:	P.O. Box 150
Affiliation City:	San Bernardino
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92408
Affiliation Phone:	(909) 733-5000
Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055
Affiliation Type Desc:	Environmental Contact
Entity Name:	Steven Toscano
Entity Title:	Not reported
Affiliation Address:	P.O. Box 150

STATER BROS MARKETS 170 (Continued) **S113466825**

Affiliation City:	San Bernardino
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92408
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Steven Toscano
Entity Title:	Supervisor of Support Services
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Property Owner
Entity Name:	Stater Bros.Markets
Entity Title:	Not reported
Affiliation Address:	P.O. Box 150
Affiliation City:	San Bernardino
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92408
Affiliation Phone:	(909) 733-5000

J34 **CORKY'S KITCHEN AND BAKERY** **DRYCLEANERS** **S121695531**
WSW **3811 BEDFORD CANYON RD STE 108** **CERS** **N/A**
1/8-1/4 **CORONA, CA 92883**
0.165 mi.
870 ft. **Site 3 of 4 in cluster J**

Relative:
Higher

Actual:
965 ft.

DRYCLEAN SOUTH COAST:

Facility ID:	141781
Application Number:	433831
Permit Number:	F70640
Status:	A
Representative Name:	KWANG HWAN LEE
Representative Telephone:	951 7366089
Permit Status:	EXPIRED
BCAT Number:	000233
BCAT Description:	DRY CLEANING EQUIP PETROLEUM SOLVENT
CCAT Number:	Not reported
CCAT Description:	Not reported
UTM East:	0
UTM North:	0

CERS TANKS:

Site ID:	108087
CERS ID:	10592263
Site Name:	CORKY'S KITCHEN AND BAKERY
CERS Description:	Chemical Storage Facilities

Violations:

Site ID:	108087
Site Name:	Corky's Kitchen and Bakery
Violation Date:	09-05-2017

CORKY'S KITCHEN AND BAKERY (Continued) **S121695531**

Citation:	Un-Specified
Violation Description:	Business Plan Program - Operations/Maintenance - General Local Ordinance
Violation Notes:	Returned to compliance on 10/13/2017. 104A- NFPA sticker needed on bulk tank, add 'SA' to white section of placard. (on tank and back door)
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	108087
Site Name:	Corky's Kitchen and Bakery
Violation Date:	09-05-2017
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to complete and electronically submit a site map with all required content.
Violation Notes:	Returned to compliance on 10/25/2017. Label bulk CO2 tank on site map
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	108087
Site Name:	Corky's Kitchen and Bakery
Violation Date:	09-05-2017
Citation:	HSC 6.95 25505(a)(4) - California Health and Safety Code, Chapter 6.95, Section(s) 25505(a)(4)
Violation Description:	Failure to provide initial and annual training to all employees in safety procedures in the event of a release or threatened release of a hazardous material or failure to document and maintain training records for a minimum of three years.
Violation Notes:	Returned to compliance on 10/15/2017. Complete hazmat training for all employees, keep sign-in sheet on site. Retain records for 3 years.
Violation Division:	Corona Fire Department
Violation Program:	HMRRP
Violation Source:	CERS

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	09-05-2017
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Corona Fire Department
Eval Program:	HMRRP
Eval Source:	CERS
Eval General Type:	Other/Unknown
Eval Date:	10-13-2017
Violations Found:	No
Eval Type:	Other, not routine, done by local agency
Eval Notes:	Not reported
Eval Division:	Corona Fire Department
Eval Program:	HMRRP
Eval Source:	CERS
Eval General Type:	Compliance Evaluation Inspection

CORKY'S KITCHEN AND BAKERY (Continued) **S121695531**

Eval Date: 09-24-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: initial inspection, required to disclose update #327
Eval Division: Corona Fire Department
Eval Program: HMRRP
Eval Source: CERS

Enforcement Action:
Site ID: 108087
Site Name: Corky's Kitchen and Bakery
Site Address: 3811 BEDFORD CANYON RD STE 108
Site City: CORONA
Site Zip: 92883
Enf Action Date: 03-29-2017
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: NOV issued via email; Failure to update HMBP.
Enf Action Division: Corona Fire Department
Enf Action Program: UNSPEC
Enf Action Source: CERS

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Riverside Cnty Env Health
Entity Title: Not reported
Affiliation Address: 4065 County Circle Drive, Room 104
Affiliation City: Riverside
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92503
Affiliation Phone: (951) 358-5055

Affiliation Type Desc: Environmental Contact
Entity Name: Michael Towles
Entity Title: Not reported
Affiliation Address: 8656 Utica Ave Ste #150
Affiliation City: Rancho Cucamonga
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 91730
Affiliation Phone: Not reported

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: 8656 Utica Ave Ste #150
Affiliation City: Rancho Cucamonga
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 91730
Affiliation Phone: Not reported

Affiliation Type Desc: Identification Signer
Entity Name: Michael Towles
Entity Title: President

CORKY'S KITCHEN AND BAKERY (Continued) **S121695531**

Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Operator
Entity Name:	Overeasy, Inc.
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(909) 941-6868
Affiliation Type Desc:	Parent Corporation
Entity Name:	Corky's Kitchen and Bakery
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Document Preparer
Entity Name:	Kim Parker
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	Michael Towles
Entity Title:	Not reported
Affiliation Address:	8656 Utica Ave Ste #150
Affiliation City:	Rancho Cucamonga
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	91730
Affiliation Phone:	(909) 941-6868

J35 **EAGLE DRY CLEANERS** **DRYCLEANERS** **S106858441**
WSW **3811 BEDFORD CANYON** **N/A**
1/8-1/4 **CORONA, CA 92883**
0.165 mi.
870 ft. **Site 4 of 4 in cluster J**

Relative: **Higher**
Actual: **965 ft.**

DRYCLEANERS:

EPA Id:	CAL000289787
NAICS Code:	81232
NAICS Description:	Drycleaning and Laundry Services (except Coin-Operated)
SIC Code:	7211
SIC Description:	Power Laundries, Family and Commercial
Create Date:	12/27/2004
Facility Active:	Yes
Inactive Date:	Not reported
Facility Addr2:	Not reported
Owner Name:	EAGLE GLEN CLEANERS
Owner Address:	1158 MERLIN LANE
Owner Address 2:	Not reported
Owner Telephone:	9097329926
Contact Name:	JEESEON LEE
Contact Address:	1158 MERLIN LANE
Contact Address 2:	Not reported
Contact Telephone:	9097329926
Mailing Name:	Not reported
Mailing Address 1:	3811 BEDFORD CANYON RD
Mailing Address 2:	STE107
Mailing City:	CORONA
Mailing State:	CA
Mailing Zip:	92883
Owner Fax:	9514963941
Region Code:	4

K36 **CORONA TRUCKING** **LUST** **S105023405**
NNE **19885 TEMESCAL CNYN** **HIST CORTESE** **N/A**
1/4-1/2 **CORONA, CA 91719**
0.260 mi.
1373 ft. **Site 1 of 2 in cluster K**

Relative: **Lower**
Actual: **854 ft.**

LUST REG 8:

Region:	8
County:	Riverside
Regional Board:	Santa Ana Region
Facility Status:	Case Closed
Case Number:	083300009T
Local Case Num:	91447
Case Type:	Soil only
Substance:	Waste Oil
Qty Leaked:	Not reported
Abate Method:	Excavate and Treat - remove contaminated soil and treat (includes spreading or land farming)
Cross Street:	JOLARA
Enf Type:	CLOS
Funding:	Not reported
How Discovered:	OM
How Stopped:	Not reported
Leak Cause:	UNK
Leak Source:	UNK
Global ID:	T0606500002
How Stopped Date:	Not reported

CORONA TRUCKING (Continued) **S105023405**

Enter Date:	7/17/1991
Date Confirmation of Leak Began:	Not reported
Date Preliminary Assessment Began:	Not reported
Discover Date:	5/20/1991
Enforcement Date:	Not reported
Close Date:	11/19/1992
Date Prelim Assessment Workplan Submitted:	8/29/1991
Date Pollution Characterization Began:	Not reported
Date Remediation Plan Submitted:	Not reported
Date Remedial Action Underway:	Not reported
Date Post Remedial Action Monitoring:	Not reported
Enter Date:	7/17/1991
GW Qualifies:	Not reported
Soil Qualifies:	Not reported
Operator:	Not reported
Facility Contact:	Not reported
Interim:	Not reported
Oversite Program:	LUST
Latitude:	33.8313027
Longitude:	-117.5178278
MTBE Date:	Not reported
Max MTBE GW:	Not reported
MTBE Concentration:	0
Max MTBE Soil:	Not reported
MTBE Fuel:	0
MTBE Tested:	Not Required to be Tested.
MTBE Class:	*
Staff:	RS
Staff Initials:	UNK
Lead Agency:	Local Agency
Local Agency:	33000L
Hydr Basin #:	UPPER SANTA ANA VALL
Beneficial:	Not reported
Priority:	Not reported
Cleanup Fund Id:	Not reported
Work Suspended:	Not reported

Summary: Not reported

RIVERSIDE CO. LUST:

Region:	RIVERSIDE
Facility ID:	91447
Employee:	Thompson
Site Closed:	Yes
Case Type:	Soil only
Facility Status:	closed/action completed
Casetype Decode:	Soil only is impacted
Fstatus Decode:	Closed/Action completed

HIST CORTESE:

Region:	CORTESE
Facility County Code:	33
Reg By:	LTNKA
Reg Id:	083300009T

K37 **CORONA TRUCKING** **LUST** **U001569024**
NNE **19885 TEMESCAL CANYON RD** **HIST UST** **N/A**
1/4-1/2 **CORONA, CA 91719** **NPDES**
0.260 mi. **CIWQS**
1373 ft. **Site 2 of 2 in cluster K** **CERS**

Relative:
Lower

Actual:
854 ft.

LUST:

Lead Agency:	RIVERSIDE COUNTY LOP
Case Type:	LUST Cleanup Site
Geo Track:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0606500002
Global Id:	T0606500002
Latitude:	33.8308987530811
Longitude:	-117.51818664418
Status:	Completed - Case Closed
Status Date:	11/19/1992
Case Worker:	SCB
RB Case Number:	083300009T
Local Agency:	RIVERSIDE COUNTY LOP
File Location:	Local Agency Warehouse
Local Case Number:	91447
Potential Media Affect:	Soil
Potential Contaminants of Concern:	Waste Oil / Motor / Hydraulic / Lubricating
Site History:	Not reported

LUST:

Global Id:	T0606500002
Contact Type:	Regional Board Caseworker
Contact Name:	ROSE SCOTT
Organization Name:	SANTA ANA RWQCB (REGION 8)
Address:	3737 MAIN STREET, SUITE 500
City:	RIVERSIDE
Email:	rose.scott@waterboards.ca.gov
Phone Number:	9513206375

Global Id:	T0606500002
Contact Type:	Local Agency Caseworker
Contact Name:	SHARON BOLTINGHOUSE
Organization Name:	RIVERSIDE COUNTY LOP
Address:	3880 LEMON ST SUITE 200
City:	RIVERSIDE
Email:	sbolting@rivco.org
Phone Number:	9519558980

LUST:

Global Id:	T0606500002
Action Type:	Other
Date:	05/20/1991
Action:	Leak Reported

Global Id:	T0606500002
Action Type:	ENFORCEMENT
Date:	11/18/1992
Action:	File review - #RCDEH Upload Site File 6/10/2015

Global Id:	T0606500002
Action Type:	ENFORCEMENT
Date:	11/19/1992
Action:	Closure/No Further Action Letter - #RCDEH1119

CORONA TRUCKING (Continued) **U001569024**

Global Id: T0606500002
Action Type: ENFORCEMENT
Date: 11/17/1992
Action: * No Action

Global Id: T0606500002
Action Type: REMEDIATION
Date: 01/22/1992
Action: Excavation

Global Id: T0606500002
Action Type: Other
Date: 05/20/1991
Action: Leak Discovery

Global Id: T0606500002
Action Type: RESPONSE
Date: 11/17/1992
Action: Monitoring Report - Quarterly

Global Id: T0606500002
Action Type: RESPONSE
Date: 09/21/1992
Action: Monitoring Report - Quarterly

Global Id: T0606500002
Action Type: RESPONSE
Date: 10/12/1992
Action: Soil and Water Investigation Report

LUST:
Global Id: T0606500002
Status: Completed - Case Closed
Status Date: 11/19/1992

Global Id: T0606500002
Status: Open - Case Begin Date
Status Date: 05/20/1991

Global Id: T0606500002
Status: Open - Remediation
Status Date: 01/22/1992

Global Id: T0606500002
Status: Open - Site Assessment
Status Date: 05/20/1991

Global Id: T0606500002
Status: Open - Verification Monitoring
Status Date: 05/26/1992

HIST UST:
File Number: Not reported
URL: Not reported
Region: STATE

CORONA TRUCKING (Continued) **U001569024**

Facility ID:	00000016478
Facility Type:	Other
Other Type:	TRUCKING CO.
Contact Name:	RONALD ADLEY
Telephone:	7147353210
Owner Name:	CORONA TRUCKING CO INC
Owner Address:	19885 TEMESCAL CANYON RD
Owner City,St,Zip:	CORONA, CA 91718
Total Tanks:	0001
Tank Num:	001
Container Num:	1
Year Installed:	1982
Tank Capacity:	00012000
Tank Used for:	PRODUCT
Type of Fuel:	DIESEL
Container Construction Thickness:	1/4
Leak Detection:	Pressure Test

NPDES:

Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported
Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	8 33I006849
Regulatory Measure Type:	Industrial
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Status:	Terminated
Status Date:	05/07/1992
Operator Name:	Industrial Freight System
Operator Address:	PO Box 99
Operator City:	Sun Valley
Operator State:	California
Operator Zip:	91353

NPDES as of 03/2018:

NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	8
Regulatory Measure ID:	288055
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	8 33I006849

CORONA TRUCKING (Continued) **U001569024**

Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	05/09/2008
Processed Date:	05/07/1992
Status:	Terminated
Status Date:	05/07/1992
Place Size:	105600
Place Size Unit:	SqFt
Contact:	David Klungreseter
Contact Title:	Branch Manager
Contact Phone:	714-735-3210
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Industrial Freight System
Operator Address:	PO Box 99
Operator City:	Sun Valley
Operator State:	California
Operator Zip:	91353
Operator Contact:	PEG Vesprini
Operator Contact Title:	Not reported
Operator Contact Phone:	818-767-6856
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	714-735-3210
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported

CORONA TRUCKING (Continued) **U001569024**

Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Termescal Creek
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	4212-Local Trucking Without Storage
Secondary Sic:	4213-Trucking, Except Local
Tertiary Sic:	Not reported

CIWQS:

Agency:	Industrial Freight System
Agency Address:	PO Box 99, Sun Valley, CA 91353
Place/Project Type:	Industrial - Local Trucking Without Storage
SIC/NAICS:	Multiple
Region:	8
Program:	INDSTW
Regulatory Measure Status:	Terminated
Regulatory Measure Type:	Storm water industrial
Order Number:	2014-0057-DWQ
WDID:	8 33I006849
NPDES Number:	CAS000001
Adoption Date:	Not reported
Effective Date:	05/07/1992
Termination Date:	Not reported
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	33.83143
Longitude:	-117.5177

CERS TANKS:

Site ID:	235304
CERS ID:	T0606500002
Site Name:	CORONA TRUCKING
CERS Description:	Leaking Underground Storage Tank Cleanup Site

Affiliation:

Affiliation Type Desc:	Local Agency Caseworker
Entity Name:	SHARON BOLTINGHOUSE - RIVERSIDE COUNTY LOP
Entity Title:	Not reported
Affiliation Address:	3880 LEMON ST SUITE 200
Affiliation City:	RIVERSIDE
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	9519558980

Affiliation Type Desc:	Regional Board Caseworker
Entity Name:	ROSE SCOTT - SANTA ANA RWQCB (REGION 8)
Entity Title:	Not reported
Affiliation Address:	3737 MAIN STREET, SUITE 500

CORONA TRUCKING (Continued) **U001569024**

Affiliation City: RIVERSIDE
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: 9513206375

L38 **LISTON ALUMINUM CO** **SEMS-ARCHIVE** **1002850763**
ESE **20401 TEMESCAL CYN** **LUST** **CAD078132362**
1/4-1/2 **CORONA, CA 91720** **CPS-SLIC**
0.347 mi. **WDS**
1830 ft. **Site 1 of 2 in cluster L** **CERS**

Relative: Lower

Actual: 834 ft.

SEMS Archive:
Site ID: 0901605
EPA ID: CAD078132362
Cong District: 37
FIPS Code: 06065
FF: N
NPL: Not on the NPL
Non NPL Status: NFRAP-Site does not qualify for the NPL based on existing information

SEMS Archive Detail:
Region: 09
Site ID: 0901605
EPA ID: CAD078132362
Site Name: LISTON ALUMINUM CO
NPL: N
FF: N
OU: 00
Action Code: VS
Action Name: ARCH SITE
SEQ: 1
Start Date: Not reported
Finish Date: 2003-09-11 04:00:00
Qual: Not reported
Current Action Lead: EPA Perf In-Hse

Region: 09
Site ID: 0901605
EPA ID: CAD078132362
Site Name: LISTON ALUMINUM CO
NPL: N
FF: N
OU: 00
Action Code: PA
Action Name: PA
SEQ: 1
Start Date: Not reported
Finish Date: 1987-01-01 05:00:00
Qual: L
Current Action Lead: EPA Perf

Region: 09
Site ID: 0901605
EPA ID: CAD078132362
Site Name: LISTON ALUMINUM CO
NPL: N

LISTON ALUMINUM CO (Continued) **1002850763**

FF:	N
OU:	00
Action Code:	DS
Action Name:	DISCVRY
SEQ:	1
Start Date:	1986-06-01 04:00:00
Finish Date:	1986-06-01 04:00:00
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901605
EPA ID:	CAD078132362
Site Name:	LISTON ALUMINUM CO
NPL:	N
FF:	N
OU:	00
Action Code:	PA
Action Name:	PA
SEQ:	2
Start Date:	Not reported
Finish Date:	1988-02-01 05:00:00
Qual:	L
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901605
EPA ID:	CAD078132362
Site Name:	LISTON ALUMINUM CO
NPL:	N
FF:	N
OU:	00
Action Code:	OO
Action Name:	SITE REASS
SEQ:	1
Start Date:	2001-09-26 04:00:00
Finish Date:	2002-11-27 05:00:00
Qual:	N
Current Action Lead:	St Perf
Region:	09
Site ID:	0901605
EPA ID:	CAD078132362
Site Name:	LISTON ALUMINUM CO
NPL:	N
FF:	N
OU:	00
Action Code:	SI
Action Name:	SI
SEQ:	1
Start Date:	Not reported
Finish Date:	1989-09-08 04:00:00
Qual:	N
Current Action Lead:	St Perf

LISTON ALUMINUM CO (Continued) **1002850763**

LUST:
Lead Agency: RIVERSIDE COUNTY LOP
Case Type: LUST Cleanup Site
Geo Track: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0606500341
Global Id: T0606500341
Latitude: 33.8237167
Longitude: -117.5102246
Status: Completed - Case Closed
Status Date: 07/14/1993
Case Worker: RIV
RB Case Number: 083302340T
Local Agency: RIVERSIDE COUNTY LOP
File Location: Not reported
Local Case Number: 93319
Potential Media Affect: Soil
Potential Contaminants of Concern: Gasoline
Site History: Not reported

LUST:
Global Id: T0606500341
Contact Type: Local Agency Caseworker
Contact Name: Riverside County LOP
Organization Name: RIVERSIDE COUNTY LOP
Address: 3880 LEMON ST SUITE 200
City: RIVERSIDE
Email: Not reported
Phone Number: 9519558980

Global Id: T0606500341
Contact Type: Regional Board Caseworker
Contact Name: VALERIE JAHN-BULL
Organization Name: SANTA ANA RWQCB (REGION 8)
Address: 3737 MAIN STREET, SUITE 500
City: RIVERSIDE
Email: valerie.jahn-bull@waterboards.ca.gov
Phone Number: 9517824903

LUST:
Global Id: T0606500341
Action Type: Other
Date: 04/13/1993
Action: Leak Reported

Global Id: T0606500341
Action Type: Other
Date: 03/19/1993
Action: Leak Discovery

Global Id: T0606500341
Action Type: ENFORCEMENT
Date: 07/13/1993
Action: File review - #RCEH site file

Global Id: T0606500341
Action Type: Other
Date: 03/19/1993
Action: Leak Stopped

LISTON ALUMINUM CO (Continued) **1002850763**

Global Id: T0606500341
Action Type: ENFORCEMENT
Date: 07/14/1993
Action: Closure/No Further Action Letter

LUST:
Global Id: T0606500341
Status: Completed - Case Closed
Status Date: 07/14/1993

Global Id: T0606500341
Status: Open - Case Begin Date
Status Date: 03/08/1993

Global Id: T0606500341
Status: Open - Site Assessment
Status Date: 03/08/1993

CPS-SLIC:
Site Name: LISTON ALUMINUM BRICK COMPANY
Region: STATE
Facility Status: **Completed - Case Closed**
Status Date: 03/04/2003
Global Id: SLT8R1534142
Lead Agency: SANTA ANA RWQCB (REGION 8)
Lead Agency Case Number: Not reported
Latitude: 33.8719664484546
Longitude: -117.570827465603
Case Type: Cleanup Program Site
Case Worker: Not reported
Local Agency: Not reported
RB Case Number: SLT8R153
File Location: Not reported
Potential Media Affected: Soil
Potential Contaminants of Concern: Not reported
Site History: THE WASTES INVOLVED ARE: BAGHOUSE DUST WASTE AND BLACK SLAG WASTE.

Click here to access the California GeoTracker records for this facility:

SLIC REG 8:
Type: Soil
Facility Status: Closed
Staff: XXX
Substance: Not reported
Lead Agency: Regional Board
Location Code: Not reported
Thomas Bros Code: Not reported

WDS:
Facility ID: Santa Ana River 33I002316
Facility Type: Industrial - Facility that treats and/or disposes of liquid or semisolid wastes from any servicing, producing, manufacturing or processing operation of whatever nature, including mining, gravel washing, geothermal operations, air conditioning, ship building and

LISTON ALUMINUM CO (Continued) **1002850763**

	repairing, oil production, storage and disposal operations, water pumping.
Facility Status:	Active - Any facility with a continuous or seasonal discharge that is under Waste Discharge Requirements.
NPDES Number:	CAS000001 The 1st 2 characters designate the state. The remaining 7 are assigned by the Regional Board
Subregion:	8
Facility Telephone:	9092774221
Facility Contact:	CRAIG HALL
Agency Name:	LISTON ALUMINUM
Agency Address:	20401 TEMESCAL CANYON RD
Agency City,St,Zip:	CORONA 91719
Agency Contact:	CRAIG HALL
Agency Telephone:	9092774221
Agency Type:	Private
SIC Code:	3341
SIC Code 2:	Not reported
Primary Waste Type:	Not reported
Primary Waste:	Not reported
Waste Type2:	Not reported
Waste2:	Not reported
Primary Waste Type:	Not reported
Secondary Waste:	Not reported
Secondary Waste Type:	Not reported
Design Flow:	0
Baseline Flow:	0
Reclamation:	Not reported
POTW:	Not reported
Treat To Water:	Minor Threat to Water Quality. A violation of a regional board order should cause a relatively minor impairment of beneficial uses compared to a major or minor threat. Not: All nurds without a TTWQ will be considered a minor threat to water quality unless coded at a higher Level. A Zero (0) may be used to code those NURDS that are found to represent no threat to water quality.
Complexity:	Category C - Facilities having no waste treatment systems, such as cooling water dischargers or thosewho must comply through best management practices, facilities with passive waste treatment and disposal systems, such as septic systems with subsurface disposal, or dischargers having waste storage systems with land disposal such as dairy waste ponds.

CERS TANKS:

Site ID:	192934
CERS ID:	T0606500341
Site Name:	LISTON ALUMINUM
CERS Description:	Leaking Underground Storage Tank Cleanup Site

Affiliation:

Affiliation Type Desc:	Regional Board Caseworker
Entity Name:	VALERIE JAHN-BULL - SANTA ANA RWQCB (REGION 8)
Entity Title:	Not reported
Affiliation Address:	3737 MAIN STREET, SUITE 500
Affiliation City:	RIVERSIDE
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	9517824903

LISTON ALUMINUM CO (Continued) **1002850763**

Affiliation Type Desc:	Local Agency Caseworker
Entity Name:	Riverside County LOP - RIVERSIDE COUNTY LOP
Entity Title:	Not reported
Affiliation Address:	3880 LEMON ST SUITE 200
Affiliation City:	RIVERSIDE
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	9519558980

Site ID:	219613
CERS ID:	SLT8R1534142
Site Name:	LISTON ALUMINUM BRICK COMPANY
CERS Description:	Cleanup Program Site

L39 **LISTON ALUMINUM** **LUST** **S105023406**
ESE **20401 TEMESCAL CNYN** **SWEEPS UST** **N/A**
1/4-1/2 **CORONA, CA 91720** **HIST CORTESE**
0.347 mi.
1830 ft. **Site 2 of 2 in cluster L**

Relative: LUST REG 8:
Lower

Actual:
834 ft.

Region:	8
County:	Riverside
Regional Board:	Santa Ana Region
Facility Status:	Case Closed
Case Number:	083302340T
Local Case Num:	93319
Case Type:	Soil only
Substance:	Gasoline
Qty Leaked:	Not reported
Abate Method:	Not reported
Cross Street:	CAJALCO
Enf Type:	CLOS
Funding:	Not reported
How Discovered:	Tank Closure
How Stopped:	Not reported
Leak Cause:	UNK
Leak Source:	UNK
Global ID:	T0606500341
How Stopped Date:	3/19/1993
Enter Date:	Not reported
Date Confirmation of Leak Began:	3/8/1993
Date Preliminary Assessment Began:	Not reported
Discover Date:	3/19/1993
Enforcement Date:	Not reported
Close Date:	7/14/1993
Date Prelim Assessment Workplan Submitted:	Not reported
Date Pollution Characterization Began:	Not reported
Date Remediation Plan Submitted:	Not reported
Date Remedial Action Underway:	Not reported
Date Post Remedial Action Monitoring:	Not reported
Enter Date:	Not reported
GW Qualifies:	Not reported
Soil Qualifies:	Not reported
Operator:	Not reported
Facility Contact:	Not reported

LISTON ALUMINUM (Continued) **S105023406**

Interim:	Not reported
Oversite Program:	LUST
Latitude:	33.8237159
Longitude:	-117.5103684
MTBE Date:	Not reported
Max MTBE GW:	Not reported
MTBE Concentration:	0
Max MTBE Soil:	Not reported
MTBE Fuel:	1
MTBE Tested:	Site NOT Tested for MTBE.Includes Unknown and Not Analyzed.
MTBE Class:	*
Staff:	VJJ
Staff Initials:	UNK
Lead Agency:	Local Agency
Local Agency:	33000L
Hydr Basin #:	UPPER SANTA ANA VALL
Beneficial:	Not reported
Priority:	Not reported
Cleanup Fund Id:	Not reported
Work Suspended:	Not reported

Summary: Not reported

RIVERSIDE CO. LUST:

Region:	RIVERSIDE
Facility ID:	93319
Employee:	Jones
Site Closed:	Yes
Case Type:	Soil only
Facility Status:	closed/action completed
Casetype Decode:	Soil only is impacted
Fstatus Decode:	Closed/Action completed

SWEEPS UST:

Status:	Active
Comp Number:	33177
Number:	1
Board Of Equalization:	44-018179
Referral Date:	11-16-92
Action Date:	11-16-92
Created Date:	03-09-89
Owner Tank Id:	000662
SWRCB Tank Id:	33-000-033177-000001
Tank Status:	A
Capacity:	5000
Active Date:	11-16-92
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	3

Status:	Active
Comp Number:	33177
Number:	1
Board Of Equalization:	44-018179
Referral Date:	11-16-92
Action Date:	11-16-92

LISTON ALUMINUM (Continued) **S105023406**

Created Date: 03-09-89
Owner Tank Id: 000662
SWRCB Tank Id: 33-000-033177-000002
Tank Status: A
Capacity: 550
Active Date: 11-16-92
Tank Use: M.V. FUEL
STG: P
Content: REG UNLEADED
Number Of Tanks: Not reported

Status: Active
Comp Number: 33177
Number: 1
Board Of Equalization: 44-018179
Referral Date: 11-16-92
Action Date: 11-16-92
Created Date: 03-09-89
Owner Tank Id: 000662
SWRCB Tank Id: 33-000-033177-000003
Tank Status: A
Capacity: 250
Active Date: 11-16-92
Tank Use: M.V. FUEL
STG: P
Content: LEADED
Number Of Tanks: Not reported

HIST CORTESE:
Region: CORTESE
Facility County Code: 33
Reg By: LTNKA
Reg Id: 083302340T

40
East
1/4-1/2
0.428 mi.
2262 ft.

Relative:
Lower

Actual:
833 ft.

ROBERTSONS CORONA ROCK PLANT
9001 CAJALCO ROAD
CORONA, CA 92883

ENVIROSTOR **S105939060**
SCH **N/A**
CERS HAZ WASTE
CERS TANKS
EMI
HAZNET
NPDES
CIWQS
CERS

ENVIROSTOR:
Facility ID: 60000738
Status: Inactive - Needs Evaluation
Status Date: 03/19/2008
Site Code: 404759
Site Type: School Investigation
Site Type Detailed: School
Acres: 104
NPL: NO
Regulatory Agencies: SMBRP
Lead Agency: SMBRP
Program Manager: Not reported
Supervisor: Shahir Haddad

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Division Branch: Southern California Schools & Brownfields Outreach
Assembly: 60
Senate: 31
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: School District
Latitude: 33.82433
Longitude: -117.5028
APN: NONE SPECIFIED
Past Use: MANUFACTURING - OTHER
Potential COC: Under Investigation
Confirmed COC: NONE SPECIFIED
Potential Description: SOIL
Alias Name: 404759
Alias Type: Project Code (Site Code)
Alias Name: 60000738
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 04/10/2008
Comments: Project Close out Cost Recovery Unit Memorandum.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 10/25/2007
Comments: Signed agreement sent (FedEx) to District.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SCH:

Facility ID: 60000738
Site Type: School Investigation
Site Type Detail: School
Site Mgmt. Req.: NONE SPECIFIED
Acres: 104
National Priorities List: NO
Cleanup Oversight Agencies: SMBRP
Lead Agency: SMBRP
Lead Agency Description: DTSC - Site Cleanup Program
Project Manager: Not reported
Supervisor: Shahir Haddad
Division Branch: Southern California Schools & Brownfields Outreach
Site Code: 404759

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Assembly:	60
Senate:	31
Special Program Status:	Not reported
Status:	Inactive - Needs Evaluation
Status Date:	03/19/2008
Restricted Use:	NO
Funding:	School District
Latitude:	33.82433
Longitude:	-117.5028
APN:	NONE SPECIFIED
Past Use:	MANUFACTURING - OTHER
Potential COC:	Under Investigation
Confirmed COC:	NONE SPECIFIED
Potential Description:	SOIL
Alias Name:	404759
Alias Type:	Project Code (Site Code)
Alias Name:	60000738
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	04/10/2008
Comments:	Project Close out Cost Recovery Unit Memorandum.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	10/25/2007
Comments:	Signed agreement sent (FedEx) to District.
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

CERS HAZ WASTE:

Site ID:	274782
CERS ID:	10626181
CERS Description:	Hazardous Waste Generator

Violations:

Site ID:	274782
Site Name:	Robertson’s Corona Rock Plant
Violation Date:	11-03-2015
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to complete and electronically submit a site map with all required content.
Violation Notes:	Returned to compliance on 02/26/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Violation Source:	CERS
Site ID:	274782
Site Name:	Robertson's Corona Rock Plant
Violation Date:	11-03-2015
Citation:	HSC 6.5 25163(a) - California Health and Safety Code, Chapter 6.5, Section(s) 25163(a)
Violation Description:	Failure to use a registered hazardous waste hauler to transport hazardous waste.
Violation Notes:	Returned to compliance on 02/26/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS
Site ID:	274782
Site Name:	Robertson's Corona Rock Plant
Violation Date:	11-03-2015
Citation:	HSC 6.11 25404.1 - California Health and Safety Code, Chapter 6.11, Section(s) 25404.1
Violation Description:	Failure to obtain and/or maintain an active hazardous waste generator permit.
Violation Notes:	Returned to compliance on 02/26/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS
Site ID:	274782
Site Name:	Robertson's Corona Rock Plant
Violation Date:	11-03-2015
Citation:	HSC 6.11 25404.1 - California Health and Safety Code, Chapter 6.11, Section(s) 25404.1
Violation Description:	Failure to maintain a valid permit.
Violation Notes:	Returned to compliance on 02/26/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	APSA
Violation Source:	CERS
Site ID:	274782
Site Name:	Robertson's Corona Rock Plant
Violation Date:	11-03-2015
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Administration/Documentation - General
Violation Notes:	Returned to compliance on 02/26/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	274782
Site Name:	Robertson's Corona Rock Plant
Violation Date:	11-03-2015
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities.
Violation Notes:	Returned to compliance on 02/26/2016.

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Violation Division: Riverside County Department of Env Health
Violation Program: HMRRP
Violation Source: CERS

Site ID: 274782
Site Name: Robertson's Corona Rock Plant
Violation Date: 11-03-2015
Citation: 22 CCR 12 66262.20 - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.20
Violation Description: Failure to prepare a hazardous waste manifest for the transport of a hazardous waste for off-site transfer, treatment, storage, or disposal.
Violation Notes: Returned to compliance on 02/26/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Site ID: 274782
Site Name: Robertson's Corona Rock Plant
Violation Date: 11-03-2015
Citation: HSC 6.67 25270.6(b) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.6(b)
Violation Description: Failure to pay the APSA Program fee.
Violation Notes: Returned to compliance on 02/26/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: APSA
Violation Source: CERS

Site ID: 274782
Site Name: Robertson's Corona Rock Plant
Violation Date: 11-03-2015
Citation: 22 CCR 12 66262.40(a) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.40(a)
Violation Description: Failure to maintain uniform hazardous waste manifest, consolidated manifest, or bills of lading copies for three years.
Violation Notes: Returned to compliance on 02/26/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 11-03-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: New Facility Inspection- Robertson's Corona Rock Plant 9001 Cajalco Rd Corona CA 92883
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 11-03-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: New Inspection Robertson's Corona Rock Plant 9001 Cajalco Rd Corona CA 92883

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Eval Division: Riverside County Department of Env Health
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 11-03-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: New Inspection Robertson's Corona Rock Plant 9001 Cajalco Rd Corona CA 92883
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Enforcement Action:
Site ID: 274782
Site Name: Robertson's Corona Rock Plant
Site Address: 9001 CAJALCO ROAD
Site City: CORONA
Site Zip: 92883
Enf Action Date: 11-03-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Riverside County Department of Env Health
Enf Action Program: APSA
Enf Action Source: CERS

Site ID: 274782
Site Name: Robertson's Corona Rock Plant
Site Address: 9001 CAJALCO ROAD
Site City: CORONA
Site Zip: 92883
Enf Action Date: 11-03-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Riverside County Department of Env Health
Enf Action Program: HMRRP
Enf Action Source: CERS

Site ID: 274782
Site Name: Robertson's Corona Rock Plant
Site Address: 9001 CAJALCO ROAD
Site City: CORONA
Site Zip: 92883
Enf Action Date: 11-03-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Riverside County Department of Env Health
Enf Action Program: HW
Enf Action Source: CERS

Affiliation:
Affiliation Type Desc: CUPA District

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055
Affiliation Type Desc:	Environmental Contact
Entity Name:	Jackie McEvoy
Entity Title:	Not reported
Affiliation Address:	P.O. Box 3600
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92882
Affiliation Phone:	Not reported
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	P.O. Box 3600
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92878
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	Robertson’s Ready Mix
Entity Title:	Not reported
Affiliation Address:	P.O. Box 3600
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92882
Affiliation Phone:	(951) 493-6500
Affiliation Type Desc:	Operator
Entity Name:	Robertson’s Ready Mix
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(951) 493-6500
Affiliation Type Desc:	Parent Corporation
Entity Name:	ROBERTSON’S
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Jackie McEvoy
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Document Preparer
Entity Name:	Jackie McEvoy
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Site ID:	99317
CERS ID:	10329007
CERS Description:	Hazardous Waste Generator

Violations:

Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	09-02-2015
Citation:	HSC 6.5 25250.19(c) - California Health and Safety Code, Chapter 6.5, Section(s) 25250.19(c)
Violation Description:	Failure to retain paperwork documenting disposal of used oil for three years.
Violation Notes:	Returned to compliance on 12/18/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	08-03-2009
Citation:	2014-0057-DWQ - Industrial General Permit
Violation Description:	SW - Late Report
Violation Notes:	Annual Report Non-Compliance Issue(s) inspection Late Report: Failure to submit 2008-2009 annual report by July 1, 2009 deadline Regional Board staff extended the submission date from July 1 to 4PM on August 3 of 2009. The annual report 1st Notice of Non-Compliance was sent out for this site, since the report was not received before this extended deadline. Sending the 1st Notice of Non-Compliance letter Annual Report Non-Compliance Issue(s) inspection: courtesy phone call for 08-09 annual report 2nd NNC letter. Staff contacted Barney Northcote (951-277-1675), and left a message with the receptionist, indicating about the site's non-compliance. Mr. Northcote was not in on this day, but staff did instruct the receptionist to pass along the message to submit the annual report in before October 8, 2009, to prevent any penalty. The receptionist will forward the staff's request, as well as

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

	have him contact staff back. Awaiting for the annual report submission. Staff's sending out 2nd NNC letter sentout via regular mail, after an extended allotment of time to submit the annual report in since 11/10/2009 hand delivery of the 1st NNC certified mail. Staff was unable to deliver certified mail to the location several times in the past, although the business is still active. Staff will send the 2nd NNC via regular mail.
Violation Division:	Water Boards
Violation Program:	INDSTW
Violation Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	09-02-2015
Citation:	HSC 6.5 25189.5(a) - California Health and Safety Code, Chapter 6.5, Section(s) 25189.5(a)
Violation Description:	Failure to properly dispose of hazardous waste at an authorized location.
Violation Notes:	Returned to compliance on 12/18/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	07-01-2012
Citation:	2014-0057-DWQ - Industrial General Permit
Violation Description:	SW - Late Report
Violation Notes:	2011-2012 annual report late submission Site has not submit the 2011-2012 annual report by 07/02/2012. - 1st Notice of Non-Compliance sent on 08/09/2012, via certified mail to facility, CC to owner.
Violation Division:	Water Boards
Violation Program:	INDSTW
Violation Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	09-02-2015
Citation:	HSC 6.5 25163(a) - California Health and Safety Code, Chapter 6.5, Section(s) 25163(a)
Violation Description:	Failure to use a registered hazardous waste hauler to transport hazardous waste.
Violation Notes:	Returned to compliance on 12/18/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	09-02-2015
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Administration/Documentation - General
Violation Notes:	Returned to compliance on 12/18/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	07-29-2010
Citation:	2014-0057-DWQ - Industrial General Permit
Violation Description:	SW - Late Report
Violation Notes:	2009-2010 Annual Report was not received by July 1, 2010. Certified letter was sent to facility address to Dan Hicks the carbon copy of the letter was sent to the owner, Barney Northcote. Both letters were sent out on 7/29/2010. 2009-2010 Annual Report was not received by July 1, 2010. Certified letter was sent to facility address to Barney Northcote or Dan Hicks the carbon copy of the letter was sent to the owner, Dan Hicks. Both letters were sent out on 9/22/2010.
Violation Division:	Water Boards
Violation Program:	INDSTW
Violation Source:	SMARTS

Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	09-02-2015
Citation:	HSC 6.5 25160.2 - California Health and Safety Code, Chapter 6.5, Section(s) 25160.2
Violation Description:	Failure to meet any of the following consolidated manifest requirements: 1) Legible receipts for each quantity of hazardous waste that is received from a generator, 2) The generator's information (name, address, identification number, contact person, telephone number of the generator, the signature of the generator or the generator's representative), 3) Date of the shipment, 4) The manifest number, 5) The volume or quantity of each waste stream received, 6) The name, address, and identification number of the authorized facility to which the hazardous waste will be transported, 7) The transporter's information (name, address, and identification number, the driver's signature), 8) A statement, signed by the generator, certifying that the generator has established a program to reduce the volume or quantity and toxicity of the hazardous waste to the degree economically practicable. 9) The generator shall retain each receipt for at least three years.
Violation Notes:	Returned to compliance on 12/18/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS

Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	07-25-2011
Citation:	2014-0057-DWQ - Industrial General Permit
Violation Description:	SW - Late Report
Violation Notes:	2010-2011 Annual Report non-submission: Annual report was received by the Regional Board or the State Board by 07/01/2011. 1st Notice of Non-Compliance sent out to facility address, and a copy letter sent to the owner, provided in the SMARTS database, on 07/25/2011.
Violation Division:	Water Boards
Violation Program:	INDSTW
Violation Source:	SMARTS

Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	09-02-2015

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Citation: 22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description: Failure to properly label hazardous waste accumulation containers with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.
Violation Notes: Returned to compliance on 12/18/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 09-02-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 12-18-2015
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Case Development Inspection
Eval Date: 11-10-2009
Violations Found: No
Eval Type: Industrial Storm Water Enforcement Follow-up
Eval Notes: Enforcement Follow-up inspection: 2nd NNC letter was sent, and received by site, but the 2008-2009 annual report was not received as of today. Staff checking on site’s status. Staff arrived at 1112 hours: On arrival, staff noted that the site is still in business. Staff discussed the situation with Mr. Dan Hicks. He was uncertain of the annual report requirement, since this is his first year taking over the paperwork. His old secretary was the one to perform the administrative work, but after downsizing, the task was passed on to him, without a clue on how to approach this. His partner, Barney Northcote, received the letters, but did not forward the letters to him for response. Staff showed Mr. Hicks the proper website for form download, and to apply for an online annual report data submission. Mr. Northcote stated that he will submit the annual report before the month ends as he will gather the data from his partner. The site is an open pit quarry. Await for the annual report.
Eval Division: Water Boards
Eval Program: INDSTW
Eval Source: SMARTS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-02-2016
Violations Found: No
Eval Type: Routine done by local agency

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Eval Notes:	Not reported
Eval Division:	Riverside County Department of Env Health
Eval Program:	APSA
Eval Source:	CERS
Eval General Type:	Other/Unknown
Eval Date:	07-16-2009
Violations Found:	No
Eval Type:	Construction Storm Water Compliance Evaluation
Eval Notes:	B Type compliance (no sampling) inspection The site has many sources of sediment. There is one obvious location where run-off is discharged where there is a 8" diameter plastic standpipe for over flow. The operations manager Dan Hicks didn't know what the GIP was, anything about a SWPPP or sampling. One of the owners Hamid Soroosh was there too and he didn't know about the SWPPP and there was no SWPPP on site. The standpipe overflows into a pipe that goes under a small levee and the discharge point is on the stream side of the levee, but was obscured by vegetation. Sent permittee email regarding the violations asking to obtain compliance.
Eval Division:	Water Boards
Eval Program:	INDSTW
Eval Source:	SMARTS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	09-02-2015
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Riverside County Department of Env Health
Eval Program:	HMRRP
Eval Source:	CERS
Eval General Type:	Case Development Inspection
Eval Date:	09-28-2009
Violations Found:	No
Eval Type:	Industrial Storm Water Enforcement Follow-up
Eval Notes:	Annual Report Non-Compliance Issue(s) inspection: This is a phone call reminder for the facility to submit the 08-09 annual report as stated in the 2nd NNC letter.. Staff contacted Barney Northcote (951-277-1675), and left a message with the receptionist, indicating about the site's non-compliance. Mr. Northcote was not in on this day, but staff did instruct the receptionist to pass along the message to submit the annual report in before October 8, 2009, to prevent any penalty. The receptionist will forward the staff's request, as well as have him contact staff back. Awaiting for the annual report submission.
Eval Division:	Water Boards
Eval Program:	INDSTW
Eval Source:	SMARTS

Enforcement Action:

Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	01-04-2011

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2009-2010 annual report non-submission status As of 1/4/11, the requested annual report had not been received for the year 2009-2010. Staff contacted Dan Hicks and Barney Northcote (951-277-1675 and 951-780-8319), and attempted to request the submission of 2009-2010 annual report status. Staff left a voicemail message indicating that the MMP will be drafted soon, if staff does not not here from him.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	07-25-2011
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2010-2011 Annual Report non-submission: Annual report was received by the Regional Board or the State Board by 07/01/2011. 1st Notice of Non-Compliance sent out to facility address, and a copy letter sent to the owner, provided in the SMARTS database, on 07/25/2011.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	07-29-2010
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2009-2010 Annual Report was not received by July 1, 2010. Certified letter was sent to facility address to Dan Hicks the carbon copy of the letter was sent to the owner, Barney Northcote. Both letters were sent out on 7/29/2010.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	08-03-2009
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	Annual Report Non-Compliance Issue(s) inspection Late Report: Failure to submit 2008-2009 annual report by July 1, 2009 deadline Regional Board staff extended the submission date from July 1 to 4PM on August 3 of 2009. The annual report 1st Notice of Non-Compliance was sent out for this site, since the report was not received before this extended

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

	deadline. Sending the 1st Notice of Non-Compliance letter
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	08-09-2012
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2011-2012 annual report late submission Site has not submit the 2011-2012 annual report by 07/02/2012. - 1st Notice of Non-Compliance sent on 08/09/2012, via certified mail to facility, CC to owner.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	09-02-2015
Enf Action Type:	Notice of Violation (Unified Program)
Enf Action Description:	Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:	Not reported
Enf Action Division:	Riverside County Department of Env Health
Enf Action Program:	HMRRP
Enf Action Source:	CERS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	09-02-2015
Enf Action Type:	Notice of Violation (Unified Program)
Enf Action Description:	Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:	Not reported
Enf Action Division:	Riverside County Department of Env Health
Enf Action Program:	HW
Enf Action Source:	CERS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	09-12-2011
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2010-2011 Annual Report non-submission: Annual report was received by the Regional Board or the State Board after the 1st Notice of Non-Compliance letter was sent out. Due date for the late annual

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

report submission, indicated by 1st Notice of Non-Compliance letter, was 08/25/2011. 2nd Notice of Non-Compliance sent out to owner address (since the certified mail to the facility failed), and a copy letter sent to the facility (to be dropped in a mailbox if available), provided in the SMARTS database on 09/12/2011.

Enf Action Division: Water Boards
Enf Action Program: INDSTW
Enf Action Source: SMARTS

Site ID: 99317
Site Name: BNI-Harlow Quarry
Site Address: 9001 CAJALCO RD
Site City: CORONA
Site Zip: 92883
Enf Action Date: 09-22-2010
Enf Action Type: Industrial Storm Water Enforcement
Enf Action Description: Industrial Storm Water Enforcement
Enf Action Notes: 2009-2010 Annual Report was not received by July 1, 2010. Certified letter was sent to facility address to Dan Hicks the carbon copy of the letter was sent to the owner, Barney Northcote or Dan Hicks. Both letters were sent out on 9/22/2010. Certified mail returned date:
Enf Action Division: Water Boards
Enf Action Program: INDSTW
Enf Action Source: SMARTS

Site ID: 99317
Site Name: BNI-Harlow Quarry
Site Address: 9001 CAJALCO RD
Site City: CORONA
Site Zip: 92883
Enf Action Date: 09-28-2009
Enf Action Type: Industrial Storm Water Enforcement
Enf Action Description: Industrial Storm Water Enforcement
Enf Action Notes: Annual Report Non-Compliance Issue(s) inspection: courtesy phone call for 08-09 annual report 2nd NNC letter. Staff contacted Barney Northcote (951-277-1675), and left a message with the receptionist, indicating about the site's non-compliance. Mr. Northcote was not in on this day, but staff did instruct the receptionist to pass along the message to submit the annual report in before October 8, 2009, to prevent any penalty. The receptionist will forward the staff's request, as well as have him contact staff back.
Enf Action Division: Water Boards
Enf Action Program: INDSTW
Enf Action Source: SMARTS

Site ID: 99317
Site Name: BNI-Harlow Quarry
Site Address: 9001 CAJALCO RD
Site City: CORONA
Site Zip: 92883
Enf Action Date: 09-28-2009
Enf Action Type: Industrial Storm Water Enforcement
Enf Action Description: Industrial Storm Water Enforcement
Enf Action Notes: Annual Report Non-Compliance Issue(s) inspection: courtesy phone call for 08-09 annual report 2nd NNC letter. Staff contacted Barney Northcote (951-277-1675), and left a message with the receptionist, indicating about the site's non-compliance. Mr. Northcote was not in

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

	on this day, but staff did instruct the receptionist to pass along the message to submit the annual report in before October 8, 2009, to prevent any penalty. The receptionist will forward the staff's request, as well as have him contact staff back. Awaiting for the annual report submission.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	10-26-2010
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	Staff's attemting to contact either Mr. Barney Northcote or Dan Hicks (951-780-8319) in regards to the outstanding 2009-2010 annual report. At 15:33, staff discussed the issue with Mr. Northcote. Mr. Northcote gave staff Dan Hicks' facility contact number, since Mr Hicks is the one to communicate with in regards to site's compliance. Staff contacted Dan Hicks (951-277-1675) at 15:40, and discussed the issue. He indicated that he set up the SMARTS account for the corporate office to use, and expected HQ to complete the annual report. He will contact corporate office and verify what the situation is. Staff will be awaiting for the answer.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	11-04-2010
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2009-2010 annual report enforcement: Contact Dan Hicks (951-277-1675) at 12:05PM and left a message, attempting to get some information about the site's 2009-2010 annual report submission. Staff did not receive any follow-up phone call from Mr. Hicks about HQ responsibility to submit the annual report. Staff will await for Mr. Hicks to call back.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	11-10-2010
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Enf Action Notes:	2009-2010 annual report enforcement: Staff attempted to contact Dan Hicks (951-277-1675) at 02:37PM and left a message with the receptionist, attempting to get some information about the site's 2009-2010 annual report submission. Staff did not receive any follow-up phone call from Mr. Hicks about HQ responsibility to submit the annual report. Staff will await for Mr. Hicks to call back.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	12-03-2009
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	Staff's sending out 2nd NNC letter sentout via regular mail, after an extended allotment of time to submit the annual report in since 11/10/2009 hand delivery of the 1st NNC certified mail. Staff was unable to deliver certified mail to the location several times in the past, although the business is still active. Staff will send the 2nd NNC via regular mail.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	12-14-2010
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2009-2010 annual report non-submission status As of today, the requested annual report had not been received for the year 2009-2010. Staff called and discussed with Mr. Dan Hicks (951-277-1675), indicating that this was last reminder before drafting the MMP, if the annual report is not received by 12/31/2010
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS

Affiliation:

Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055
Affiliation Type Desc:	Environmental Contact

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Entity Name:	BARNEY NORTHCOTE
Entity Title:	Not reported
Affiliation Address:	16805 Evening Star Rd
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92506
Affiliation Phone:	Not reported

Affiliation Type Desc:	Operator
Entity Name:	BARNEY NORTHCOTE
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(951) 780-8319

Affiliation Type Desc:	Parent Corporation
Entity Name:	BNI-Harlow Quarry
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Property Owner
Entity Name:	Cajalco Road Quarry
Entity Title:	Not reported
Affiliation Address:	200 S. Main St. Suite 200
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92882
Affiliation Phone:	(951) 760-4241

Affiliation Type Desc:	Document Preparer
Entity Name:	Sherril Castano
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	16805 Evening Star Rd
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92506

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Affiliation Phone: Not reported

Affiliation Type Desc: Legal Owner
Entity Name: BARNEY NORTHCOTE
Entity Title: Not reported
Affiliation Address: 16805 Evening Star Rd
Affiliation City: Riverside
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 92506
Affiliation Phone: (951) 780-8319

Affiliation Type Desc: Owner/Operator
Entity Name: Barney Norhtcote Incorporated
Entity Title: Operator
Affiliation Address: 16805 Evening Star Rd
Affiliation City: Riverside
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92506
Affiliation Phone: Not reported

Affiliation Type Desc: Identification Signer
Entity Name: Sherril Castano
Entity Title: Office Manager
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

CERS TANKS:
Facility Name: ROBERTSON'S CORONA ROCK PLANT
Site ID: 274782
CERS ID: 10626181
CERS Description: Aboveground Petroleum Storage

Violations:
Site ID: 274782
Site Name: Robertson's Corona Rock Plant
Violation Date: 11-03-2015
Citation: HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description: Failure to complete and electronically submit a site map with all required content.
Violation Notes: Returned to compliance on 02/26/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: HMRRP
Violation Source: CERS

Site ID: 274782
Site Name: Robertson's Corona Rock Plant
Violation Date: 11-03-2015
Citation: HSC 6.5 25163(a) - California Health and Safety Code, Chapter 6.5, Section(s) 25163(a)

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Violation Description:	Failure to use a registered hazardous waste hauler to transport hazardous waste.
Violation Notes:	Returned to compliance on 02/26/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS
Site ID:	274782
Site Name:	Robertson's Corona Rock Plant
Violation Date:	11-03-2015
Citation:	HSC 6.11 25404.1 - California Health and Safety Code, Chapter 6.11, Section(s) 25404.1
Violation Description:	Failure to obtain and/or maintain an active hazardous waste generator permit.
Violation Notes:	Returned to compliance on 02/26/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS
Site ID:	274782
Site Name:	Robertson's Corona Rock Plant
Violation Date:	11-03-2015
Citation:	HSC 6.11 25404.1 - California Health and Safety Code, Chapter 6.11, Section(s) 25404.1
Violation Description:	Failure to maintain a valid permit.
Violation Notes:	Returned to compliance on 02/26/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	APSA
Violation Source:	CERS
Site ID:	274782
Site Name:	Robertson's Corona Rock Plant
Violation Date:	11-03-2015
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Administration/Documentation - General
Violation Notes:	Returned to compliance on 02/26/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	274782
Site Name:	Robertson's Corona Rock Plant
Violation Date:	11-03-2015
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities.
Violation Notes:	Returned to compliance on 02/26/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	274782
Site Name:	Robertson's Corona Rock Plant
Violation Date:	11-03-2015

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Citation:	22 CCR 12 66262.20 - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.20
Violation Description:	Failure to prepare a hazardous waste manifest for the transport of a hazardous waste for off-site transfer, treatment, storage, or disposal.
Violation Notes:	Returned to compliance on 02/26/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS
Site ID:	274782
Site Name:	Robertson's Corona Rock Plant
Violation Date:	11-03-2015
Citation:	HSC 6.67 25270.6(b) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.6(b)
Violation Description:	Failure to pay the APSA Program fee.
Violation Notes:	Returned to compliance on 02/26/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	APSA
Violation Source:	CERS
Site ID:	274782
Site Name:	Robertson's Corona Rock Plant
Violation Date:	11-03-2015
Citation:	22 CCR 12 66262.40(a) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.40(a)
Violation Description:	Failure to maintain uniform hazardous waste manifest, consolidated manifest, or bills of lading copies for three years.
Violation Notes:	Returned to compliance on 02/26/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	11-03-2015
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	New Facility Inspection- Robertson's Corona Rock Plant 9001 Cajalco Rd Corona CA 92883
Eval Division:	Riverside County Department of Env Health
Eval Program:	HMRRP
Eval Source:	CERS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	11-03-2015
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	New Inspection Robertson's Corona Rock Plant 9001 Cajalco Rd Corona CA 92883
Eval Division:	Riverside County Department of Env Health
Eval Program:	APSA
Eval Source:	CERS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	11-03-2015
Violations Found:	Yes

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Eval Type: Routine done by local agency
Eval Notes: New Inspection Robertson's Corona Rock Plant 9001 Cajalco Rd Corona CA 92883
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Enforcement Action:
Site ID: 274782
Site Name: Robertson's Corona Rock Plant
Site Address: 9001 CAJALCO ROAD
Site City: CORONA
Site Zip: 92883
Enf Action Date: 11-03-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Riverside County Department of Env Health
Enf Action Program: APSA
Enf Action Source: CERS

Site ID: 274782
Site Name: Robertson's Corona Rock Plant
Site Address: 9001 CAJALCO ROAD
Site City: CORONA
Site Zip: 92883
Enf Action Date: 11-03-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Riverside County Department of Env Health
Enf Action Program: HMRRP
Enf Action Source: CERS

Site ID: 274782
Site Name: Robertson's Corona Rock Plant
Site Address: 9001 CAJALCO ROAD
Site City: CORONA
Site Zip: 92883
Enf Action Date: 11-03-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Riverside County Department of Env Health
Enf Action Program: HW
Enf Action Source: CERS

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Riverside Cnty Env Health
Entity Title: Not reported
Affiliation Address: 4065 County Circle Drive, Room 104
Affiliation City: Riverside
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92503

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Affiliation Phone:	(951) 358-5055
Affiliation Type Desc:	Environmental Contact
Entity Name:	Jackie McEvoy
Entity Title:	Not reported
Affiliation Address:	P.O. Box 3600
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92882
Affiliation Phone:	Not reported
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	P.O. Box 3600
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92878
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	Robertson's Ready Mix
Entity Title:	Not reported
Affiliation Address:	P.O. Box 3600
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92882
Affiliation Phone:	(951) 493-6500
Affiliation Type Desc:	Operator
Entity Name:	Robertson's Ready Mix
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(951) 493-6500
Affiliation Type Desc:	Parent Corporation
Entity Name:	ROBERTSON'S
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Jackie McEvoy
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Document Preparer
Entity Name: Jackie McEvoy
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Site ID: 99317
CERS ID: 10329007
CERS Description: Aboveground Petroleum Storage

Violations:
Site ID: 99317
Site Name: BNI-Harlow Quarry
Violation Date: 09-02-2015
Citation: HSC 6.5 25250.19(c) - California Health and Safety Code, Chapter 6.5, Section(s) 25250.19(c)
Violation Description: Failure to retain paperwork documenting disposal of used oil for three years.
Violation Notes: Returned to compliance on 12/18/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Site ID: 99317
Site Name: BNI-Harlow Quarry
Violation Date: 08-03-2009
Citation: 2014-0057-DWQ - Industrial General Permit
Violation Description: SW - Late Report
Violation Notes: Annual Report Non-Compliance Issue(s) inspection Late Report: Failure to submit 2008-2009 annual report by July 1, 2009 deadline Regional Board staff extended the submission date from July 1 to 4PM on August 3 of 2009. The annual report 1st Notice of Non-Compliance was sent out for this site, since the report was not received before this extended deadline. Sending the 1st Notice of Non-Compliance letter Annual Report Non-Compliance Issue(s) inspection: courtesy phone call for 08-09 annual report 2nd NNC letter. Staff contacted Barney Northcote (951-277-1675), and left a message with the receptionist, indicating about the site's non-compliance. Mr. Northcote was not in on this day, but staff did instruct the receptionist to pass along the message to submit the annual report in before October 8, 2009, to prevent any penalty. The receptionist will forward the staff's request, as well as have him contact staff back. Awaiting for the annual report submission. Staff's sending out 2nd NNC letter sentout via regular mail, after an extended allotment of time to submit the annual report in since 11/10/2009 hand delivery of the 1st NNC certified mail. Staff was unable to deliver certified mail to the location several times in the past, although the business is still active. Staff will send the 2nd NNC via regular mail.

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Violation Division:	Water Boards
Violation Program:	INDSTW
Violation Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	09-02-2015
Citation:	HSC 6.5 25189.5(a) - California Health and Safety Code, Chapter 6.5, Section(s) 25189.5(a)
Violation Description:	Failure to properly dispose of hazardous waste at an authorized location.
Violation Notes:	Returned to compliance on 12/18/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	07-01-2012
Citation:	2014-0057-DWQ - Industrial General Permit
Violation Description:	SW - Late Report
Violation Notes:	2011-2012 annual report late submission Site has not submit the 2011-2012 annual report by 07/02/2012. - 1st Notice of Non-Compliance sent on 08/09/2012, via certified mail to facility, CC to owner.
Violation Division:	Water Boards
Violation Program:	INDSTW
Violation Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	09-02-2015
Citation:	HSC 6.5 25163(a) - California Health and Safety Code, Chapter 6.5, Section(s) 25163(a)
Violation Description:	Failure to use a registered hazardous waste hauler to transport hazardous waste.
Violation Notes:	Returned to compliance on 12/18/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	09-02-2015
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Administration/Documentation - General
Violation Notes:	Returned to compliance on 12/18/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	07-29-2010
Citation:	2014-0057-DWQ - Industrial General Permit
Violation Description:	SW - Late Report
Violation Notes:	2009-2010 Annual Report was not received by July 1, 2010. Certified

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

letter was sent to facility address to Dan Hicks the carbon copy of the letter was sent to the owner, Barney Northcote. Both letters were sent out on 7/29/2010. 2009-2010 Annual Report was not received by July 1, 2010. Certified letter was sent to facility address to Barney Northcote or Dan Hicks the carbon copy of the letter was sent to the owner, Dan Hicks. Both letters were sent out on 9/22/2010.

Violation Division: Water Boards
Violation Program: INDSTW
Violation Source: SMARTS

Site ID: 99317
Site Name: BNI-Harlow Quarry
Violation Date: 09-02-2015
Citation: HSC 6.5 25160.2 - California Health and Safety Code, Chapter 6.5, Section(s) 25160.2
Violation Description: Failure to meet any of the following consolidated manifest requirements: 1) Legible receipts for each quantity of hazardous waste that is received from a generator, 2) The generator's information (name, address, identification number, contact person, telephone number of the generator, the signature of the generator or the generator's representative), 3) Date of the shipment, 4) The manifest number, 5) The volume or quantity of each waste stream received, 6) The name, address, and identification number of the authorized facility to which the hazardous waste will be transported, 7) The transporter's information (name, address, and identification number, the driver's signature), 8) A statement, signed by the generator, certifying that the generator has established a program to reduce the volume or quantity and toxicity of the hazardous waste to the degree economically practicable. 9) The generator shall retain each receipt for at least three years.
Violation Notes: Returned to compliance on 12/18/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Site ID: 99317
Site Name: BNI-Harlow Quarry
Violation Date: 07-25-2011
Citation: 2014-0057-DWQ - Industrial General Permit
Violation Description: SW - Late Report
Violation Notes: 2010-2011 Annual Report non-submission: Annual report was received by the Regional Board or the State Board by 07/01/2011. 1st Notice of Non-Compliance sent out to facility address, and a copy letter sent to the owner, provided in the SMARTS database, on 07/25/2011.
Violation Division: Water Boards
Violation Program: INDSTW
Violation Source: SMARTS

Site ID: 99317
Site Name: BNI-Harlow Quarry
Violation Date: 09-02-2015
Citation: 22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description: Failure to properly label hazardous waste accumulation containers with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Violation Notes: Returned to compliance on 12/18/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 09-02-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 12-18-2015
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Case Development Inspection
Eval Date: 11-10-2009
Violations Found: No
Eval Type: Industrial Storm Water Enforcement Follow-up
Eval Notes: Enforcement Follow-up inspection: 2nd NNC letter was sent, and received by site, but the 2008-2009 annual report was not received as of today. Staff checking on site's status. Staff arrived at 1112 hours: On arrival, staff noted that the site is still in business. Staff discussed the situation with Mr. Dan Hicks. He was uncertain of the annual report requirement, since this is his first year taking over the paperwork. His old secretary was the one to perform the administrative work, but after downsizing, the task was passed on to him, without a clue on how to approach this. His partner, Barney Northcote, received the letters, but did not forward the letters to him for response. Staff showed Mr. Hicks the proper website for form download, and to apply for an online annual report data submission. Mr. Northcote stated that he will submit the annual report before the month ends as he will gather the data from his partner. The site is an open pit quarry. Await for the annual report.
Eval Division: Water Boards
Eval Program: INDSTW
Eval Source: SMARTS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-02-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: APSA
Eval Source: CERS

Eval General Type: Other/Unknown

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Eval Date:	07-16-2009
Violations Found:	No
Eval Type:	Construction Storm Water Compliance Evaluation
Eval Notes:	B Type compliance (no sampling) inspection The site has many sources of sediment. There is one obvious location where run-off is discharged where there is a 8" diameter plastic standpipe for over flow. The operations manager Dan Hicks didn't know what the GIP was, anything about a SWPPP or sampling. One of the owners Hamid Soroosh was there too and he didn't know about the SWPPP and there was no SWPPP on site. The standpipe overflows into a pipe that goes under a small levee and the discharge point is on the stream side of the levee, but was obscured by vegetation. Sent permittee email regarding the violations asking to obtain compliance.
Eval Division:	Water Boards
Eval Program:	INDSTW
Eval Source:	SMARTS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	09-02-2015
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Riverside County Department of Env Health
Eval Program:	HMRRP
Eval Source:	CERS
Eval General Type:	Case Development Inspection
Eval Date:	09-28-2009
Violations Found:	No
Eval Type:	Industrial Storm Water Enforcement Follow-up
Eval Notes:	Annual Report Non-Compliance Issue(s) inspection: This is a phone call reminder for the facility to submit the 08-09 annual report as stated in the 2nd NNC letter.. Staff contacted Barney Northcote (951-277-1675), and left a message with the receptionist, indicating about the site's non-compliance. Mr. Northcote was not in on this day, but staff did instruct the receptionist to pass along the message to submit the annual report in before October 8, 2009, to prevent any penalty. The receptionist will forward the staff's request, as well as have him contact staff back. Awaiting for the annual report submission.
Eval Division:	Water Boards
Eval Program:	INDSTW
Eval Source:	SMARTS

Enforcement Action:

Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	01-04-2011
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2009-2010 annual report non-submission status As of 1/4/11, the requested annual report had not been received for the year 2009-2010. Staff contacted Dan Hicks and Barney Northcote (951-277-1675 and 951-780-8319), and attempted to request the submission of 2009-2010

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

	annual report status. Staff left a voicemail message indicating that the MMP will be drafted soon, if staff does not not here from him.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	07-25-2011
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2010-2011 Annual Report non-submission: Annual report was received by the Regional Board or the State Board by 07/01/2011. 1st Notice of Non-Compliance sent out to facility address, and a copy letter sent to the owner, provided in the SMARTS database, on 07/25/2011.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	07-29-2010
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2009-2010 Annual Report was not received by July 1, 2010. Certified letter was sent to facility address to Dan Hicks the carbon copy of the letter was sent to the owner, Barney Northcote. Both letters were sent out on 7/29/2010.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	08-03-2009
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	Annual Report Non-Compliance Issue(s) inspection Late Report: Failure to submit 2008-2009 annual report by July 1, 2009 deadline Regional Board staff extended the submission date from July 1 to 4PM on August 3 of 2009. The annual report 1st Notice of Non-Compliance was sent out for this site, since the report was not received before this extended deadline. Sending the 1st Notice of Non-Compliance letter
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	08-09-2012
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2011-2012 annual report late submission Site has not submit the 2011-2012 annual report by 07/02/2012. - 1st Notice of Non-Compliance sent on 08/09/2012, via certified mail to facility, CC to owner.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS

Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	09-02-2015
Enf Action Type:	Notice of Violation (Unified Program)
Enf Action Description:	Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:	Not reported
Enf Action Division:	Riverside County Department of Env Health
Enf Action Program:	HMRRP
Enf Action Source:	CERS

Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	09-02-2015
Enf Action Type:	Notice of Violation (Unified Program)
Enf Action Description:	Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:	Not reported
Enf Action Division:	Riverside County Department of Env Health
Enf Action Program:	HW
Enf Action Source:	CERS

Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	09-12-2011
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2010-2011 Annual Report non-submission: Annual report was received by the Regional Board or the State Board after the 1st Notice of Non-Compliance letter was sent out. Due date for the late annual report submission, indicated by 1st Notice of Non-Compliance letter, was 08/25/2011. 2nd Notice of Non-Compliance sent out to owner address (since the certified mail to the facility failed), and a copy letter sent to the facility (to be dropped in a mailbox if available), provided in the SMARTS database on 09/12/2011.
Enf Action Division:	Water Boards

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	09-22-2010
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2009-2010 Annual Report was not received by July 1, 2010. Certified letter was sent to facility address to Dan Hicks the carbon copy of the letter was sent to the owner, Barney Northcote or Dan Hicks. Both letters were sent out on 9/22/2010. Certified mail returned date:
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	09-28-2009
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	Annual Report Non-Compliance Issue(s) inspection: courtesy phone call for 08-09 annual report 2nd NNC letter. Staff contacted Barney Northcote (951-277-1675), and left a message with the receptionist, indicating about the site's non-compliance. Mr. Northcote was not in on this day, but staff did instruct the receptionist to pass along the message to submit the annual report in before October 8, 2009, to prevent any penalty. The receptionist will forward the staff's request, as well as have him contact staff back.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	09-28-2009
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	Annual Report Non-Compliance Issue(s) inspection: courtesy phone call for 08-09 annual report 2nd NNC letter. Staff contacted Barney Northcote (951-277-1675), and left a message with the receptionist, indicating about the site's non-compliance. Mr. Northcote was not in on this day, but staff did instruct the receptionist to pass along the message to submit the annual report in before October 8, 2009, to prevent any penalty. The receptionist will forward the staff's request, as well as have him contact staff back. Awaiting for the annual report submission.
Enf Action Division:	Water Boards

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	10-26-2010
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	Staff's attemting to contact either Mr. Barney Northcote or Dan Hicks (951-780-8319) in regards to the outstanding 2009-2010 annual report. At 15:33, staff discussed the issue with Mr. Northcote. Mr. Northcote gave staff Dan Hicks' facility contact number, since Mr Hicks is the one to communicate with in regards to site's compliance. Staff contacted Dan Hicks (951-277-1675) at 15:40, and discussed the issue. He indicated that he set up the SMARTS account for the corporate office to use, and expected HQ to complete the annual report. He will contact corporate office and verify what the situation is. Staff will be awaiting for the answer.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	11-04-2010
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2009-2010 annual report enforcement: Contact Dan Hicks (951-277-1675) at 12:05PM and left a message, attempting to get some information about the site's 2009-2010 annual report submission. Staff did not receive any follow-up phone call from Mr. Hicks about HQ responsibility to submit the annual report. Staff will await for Mr. Hicks to call back.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	11-10-2010
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2009-2010 annual report enforcement: Staff attempted to contact Dan Hicks (951-277-1675) at 02:37PM and left a message with the receptionist, attempting to get some information about the site's 2009-2010 annual report submission. Staff did not receive any follow-up phone call from Mr. Hicks about HQ responsibility to submit the annual report. Staff will await for Mr. Hicks to call back.

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	12-03-2009
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	Staff's sending out 2nd NNC letter sentout via regular mail, after an extended allotment of time to submit the annual report in since 11/10/2009 hand delivery of the 1st NNC certified mail. Staff was unable to deliver certified mail to the location several times in the past, although the business is still active. Staff will send the 2nd NNC via regular mail.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	12-14-2010
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2009-2010 annual report non-submission status As of today, the requested annual report had not been received for the year 2009-2010. Staff called and discussed with Mr. Dan Hicks (951-277-1675), indicating that this was last reminder before drafting the MMP, if the annual report is not received by 12/31/2010
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS

Affiliation:

Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055
Affiliation Type Desc:	Environmental Contact
Entity Name:	BARNEY NORTHCOTE
Entity Title:	Not reported
Affiliation Address:	16805 Evening Star Rd
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Affiliation Zip:	92506
Affiliation Phone:	Not reported
Affiliation Type Desc:	Operator
Entity Name:	BARNEY NORTHCOTE
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(951) 780-8319
Affiliation Type Desc:	Parent Corporation
Entity Name:	BNI-Harlow Quarry
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Property Owner
Entity Name:	Cajalco Road Quarry
Entity Title:	Not reported
Affiliation Address:	200 S. Main St. Suite 200
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92882
Affiliation Phone:	(951) 760-4241
Affiliation Type Desc:	Document Preparer
Entity Name:	Sherril Castano
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	16805 Evening Star Rd
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92506
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	BARNEY NORTHCOTE
Entity Title:	Not reported
Affiliation Address:	16805 Evening Star Rd

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92506
Affiliation Phone:	(951) 780-8319
Affiliation Type Desc:	Owner/Operator
Entity Name:	Barney Norhtcote Incorporated
Entity Title:	Operator
Affiliation Address:	16805 Evening Star Rd
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92506
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Sherril Castano
Entity Title:	Office Manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

EMI:

Year:	1995
County Code:	33
Air Basin:	SC
Facility ID:	20688
Air District Name:	SC
SIC Code:	1623
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	1
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1996
County Code:	33
Air Basin:	SC
Facility ID:	20688
Air District Name:	SC
SIC Code:	1623
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	1
Carbon Monoxide Emissions Tons/Yr:	2

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

NOX - Oxides of Nitrogen Tons/Yr:	11
SOX - Oxides of Sulphur Tons/Yr:	1
Particulate Matter Tons/Yr:	3
Part. Matter 10 Micrometers and Smllr Tons/Yr:	2

Year:	1997
County Code:	33
Air Basin:	SC
Facility ID:	20688
Air District Name:	SC
SIC Code:	1623
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	5
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	4
Part. Matter 10 Micrometers and Smllr Tons/Yr:	1

Year:	1998
County Code:	33
Air Basin:	SC
Facility ID:	20688
Air District Name:	SC
SIC Code:	1623
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	5
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	4
Part. Matter 10 Micrometers and Smllr Tons/Yr:	1

Year:	1999
County Code:	33
Air Basin:	SC
Facility ID:	20688
Air District Name:	SC
SIC Code:	1623
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	5
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	4
Part. Matter 10 Micrometers and Smllr Tons/Yr:	1

Year:	2000

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

County Code:	33
Air Basin:	SC
Facility ID:	20688
Air District Name:	SC
SIC Code:	1623
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	5
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	4
Part. Matter 10 Micrometers and Smllr Tons/Yr:	1

Year:	2001
County Code:	33
Air Basin:	SC
Facility ID:	20688
Air District Name:	SC
SIC Code:	1623
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	2
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

HAZNET:

Site Name:	ROBERTSONS READY MIX
Year:	2017
GEPAID:	CAL000406161
Contact:	JACKIE MCEVOY
Telephone:	9514936500
Mailing Name:	Not reported
Mailing Address:	PO BOX 3600
Mailing City,St,Zip:	CORONA, CA 928783600
Gen County:	Riverside
TSD EPA ID:	CAL000330453
TSD County:	Los Angeles
Tons:	1.25
CA Waste Code:	352-Other organic solids
Method:	H010-Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Facility County:	Riverside

Site Name:	ROBERTSONS READY MIX
Year:	2016
GEPAID:	CAL000406161
Contact:	JACKIE MCEVOY
Telephone:	9514936500
Mailing Name:	Not reported
Mailing Address:	PO BOX 3600

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Mailing City,St,Zip: CORONA, CA 928783600
Gen County: Riverside
TSD EPA ID: AZD081705402
TSD County: 99
Tons: 0.2
CA Waste Code: 352-Other organic solids
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Riverside

NPDES:
Facility Status: Active
NPDES Number: CAS000001
Region: 8
Agency Number: 0
Regulatory Measure ID: 448860
Place ID: Not reported
Order Number: 97-03-DWQ
WDID: 8 33I025015
Regulatory Measure Type: Enrollee
Program Type: Industrial
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: 08/19/2014
Termination Date Of Regulatory Measure: Not reported
Expiration Date Of Regulatory Measure: Not reported
Discharge Address: PO Box 3600
Discharge Name: Robertsons Ready Mix
Discharge City: Corona
Discharge State: California
Discharge Zip: 92878
Status: Not reported
Status Date: Not reported
Operator Name: Not reported
Operator Address: Not reported
Operator City: Not reported
Operator State: Not reported
Operator Zip: Not reported

NPDES as of 03/2018:
NPDES Number: CAS000001
Status: Active
Agency Number: 0
Region: 8
Regulatory Measure ID: 448860
Order Number: 97-03-DWQ
Regulatory Measure Type: Enrollee
Place ID: Not reported
WDID: 8 33I025015
Program Type: Industrial
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: 08/19/2014
Expiration Date Of Regulatory Measure: Not reported
Termination Date Of Regulatory Measure: Not reported
Discharge Name: Robertsons Ready Mix
Discharge Address: PO Box 3600
Discharge City: Corona
Discharge State: California

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Discharge Zip:	92878
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	8
Regulatory Measure ID:	448860
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	8 33I025015
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	08/19/2014
Processed Date:	08/19/2014
Status:	Active
Status Date:	08/19/2014
Place Size:	59
Place Size Unit:	Acres
Contact:	Roger Hortick
Contact Title:	Safety DIrector
Contact Phone:	951-493-6500
Contact Phone Ext:	Not reported
Contact Email:	roger@rrmca.com
Operator Name:	Robertsons Ready Mix
Operator Address:	PO Box 3600
Operator City:	Corona
Operator State:	California
Operator Zip:	92878
Operator Contact:	Roger Hortick
Operator Contact Title:	Safety Director
Operator Contact Phone:	951-493-6500
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	roger@rrmca.com
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	Temescal Creek
Certifier:	Roger Hortick
Certifier Title:	Environmental Director
Certification Date:	09-FEB-17
Primary Sic:	1442-Construction Sand and Gravel
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported
Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	8 33I025015
Regulatory Measure Type:	Industrial
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Status:	Active
Status Date:	08/19/2014
Operator Name:	Robertsons Ready Mix
Operator Address:	PO Box 3600
Operator City:	Corona
Operator State:	California
Operator Zip:	92878

NPDES as of 03/2018:

NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	8
Regulatory Measure ID:	448860
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	8 33I025015
Program Type:	Industrial

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	08/19/2014
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Robertsons Ready Mix
Discharge Address:	PO Box 3600
Discharge City:	Corona
Discharge State:	California
Discharge Zip:	92878
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	8
Regulatory Measure ID:	448860
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	8 33I025015
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	08/19/2014
Processed Date:	08/19/2014
Status:	Active
Status Date:	08/19/2014
Place Size:	59
Place Size Unit:	Acres
Contact:	Roger Hortick
Contact Title:	Safety DIrector
Contact Phone:	951-493-6500
Contact Phone Ext:	Not reported
Contact Email:	roger@rrmca.com
Operator Name:	Robertsons Ready Mix
Operator Address:	PO Box 3600
Operator City:	Corona
Operator State:	California
Operator Zip:	92878
Operator Contact:	Roger Hortick
Operator Contact Title:	Safety Director
Operator Contact Phone:	951-493-6500
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	roger@rrmca.com
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	Temescal Creek
Certifier:	Roger Hortick
Certifier Title:	Environmental Director
Certification Date:	09-FEB-17
Primary Sic:	1442-Construction Sand and Gravel
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

Facility Status:	Active
NPDES Number:	CAS000001
Region:	8
Agency Number:	0
Regulatory Measure ID:	362160
Place ID:	Not reported
Order Number:	97-03-DWQ
WDID:	8 33I022068
Regulatory Measure Type:	Enrollee
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	03/18/2009
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	16805 Evening Star Rd
Discharge Name:	Barney Norhtcote Incorporated
Discharge City:	Riverside
Discharge State:	California
Discharge Zip:	92506
Status:	Not reported
Status Date:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported

NPDES as of 03/2018:

NPDES Number:	CAS000001

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Status:	Active
Agency Number:	0
Region:	8
Regulatory Measure ID:	362160
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	8 33I022068
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	03/18/2009
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Barney Norhtcote Incorporated
Discharge Address:	16805 Evening Star Rd
Discharge City:	Riverside
Discharge State:	California
Discharge Zip:	92506
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	8
Regulatory Measure ID:	362160
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	8 33I022068
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	03/09/2009
Processed Date:	03/18/2009
Status:	Active
Status Date:	03/18/2009
Place Size:	110
Place Size Unit:	Acres
Contact:	Barney Northcote
Contact Title:	Not reported
Contact Phone:	951-780-8319
Contact Phone Ext:	Not reported
Contact Email:	northcote@sbcglobal.net
Operator Name:	Barney Norhtcote Incorporated
Operator Address:	16805 Evening Star Rd
Operator City:	Riverside
Operator State:	California
Operator Zip:	92506
Operator Contact:	Barney Northcote
Operator Contact Title:	Not reported
Operator Contact Phone:	951-780-8319
Operator Contact Phone Ext:	Not reported

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Operator Contact Email:	northcote@sbcglobal.net
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	951-277-1675
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	Temescal Wash
Certifier:	Barney Northcote
Certifier Title:	President
Certification Date:	18-MAY-15
Primary Sic:	1099-Miscellaneous Metal Ores, NEC
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported
Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	8 33I022068
Regulatory Measure Type:	Industrial
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Status:	Active
Status Date:	03/18/2009
Operator Name:	Barney Norhtcote Incorporated
Operator Address:	16805 Evening Star Rd
Operator City:	Riverside
Operator State:	California
Operator Zip:	92506

NPDES as of 03/2018:

NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	8
Regulatory Measure ID:	362160
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	8 33I022068
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	03/18/2009
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Barney Norhtcote Incorporated
Discharge Address:	16805 Evening Star Rd
Discharge City:	Riverside
Discharge State:	California
Discharge Zip:	92506
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	8
Regulatory Measure ID:	362160
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	8 33I022068
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	03/09/2009
Processed Date:	03/18/2009
Status:	Active
Status Date:	03/18/2009
Place Size:	110
Place Size Unit:	Acres
Contact:	Barney Northcote
Contact Title:	Not reported
Contact Phone:	951-780-8319
Contact Phone Ext:	Not reported
Contact Email:	northcote@sbcglobal.net

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Operator Name:	Barney Norhtcote Incorporated
Operator Address:	16805 Evening Star Rd
Operator City:	Riverside
Operator State:	California
Operator Zip:	92506
Operator Contact:	Barney Northcote
Operator Contact Title:	Not reported
Operator Contact Phone:	951-780-8319
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	northcote@sbcglobal.net
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	951-277-1675
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	Temescal Wash
Certifier:	Barney Northcote
Certifier Title:	President
Certification Date:	18-MAY-15
Primary Sic:	1099-Miscellaneous Metal Ores, NEC
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

CIWQS:

Agency:	Robertsons Ready Mix
Agency Address:	PO Box 3600, Corona, CA 92878
Place/Project Type:	Industrial - Construction Sand and Gravel
SIC/NAICS:	1442
Region:	8
Program:	INDSTW
Regulatory Measure Status:	Active
Regulatory Measure Type:	Storm water industrial
Order Number:	2014-0057-DWQ

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

WDID:	8 33I025015
NPDES Number:	CAS000001
Adoption Date:	Not reported
Effective Date:	08/19/2014
Termination Date:	Not reported
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	33.8244
Longitude:	-117.50107

Agency:	Barney Norhtcote Incorporated
Agency Address:	16805 Evening Star Rd, Riverside, CA 92506
Place/Project Type:	Industrial - Miscellaneous Metal Ores, NEC
SIC/NAICS:	1099
Region:	8
Program:	INDSTW
Regulatory Measure Status:	Active
Regulatory Measure Type:	Storm water industrial
Order Number:	2014-0057-DWQ
WDID:	8 33I022068
NPDES Number:	CAS000001
Adoption Date:	Not reported
Effective Date:	03/18/2009
Termination Date:	Not reported
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	33.82436
Longitude:	-117.50276

CERS TANKS:

Site ID:	99317
CERS ID:	10329007
Site Name:	BNI-HARLOW QUARRY
CERS Description:	Chemical Storage Facilities

Violations:

Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	09-02-2015
Citation:	HSC 6.5 25250.19(c) - California Health and Safety Code, Chapter 6.5, Section(s) 25250.19(c)
Violation Description:	Failure to retain paperwork documenting disposal of used oil for three years.
Violation Notes:	Returned to compliance on 12/18/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	08-03-2009
Citation:	2014-0057-DWQ - Industrial General Permit
Violation Description:	SW - Late Report
Violation Notes:	Annual Report Non-Compliance Issue(s) inspection Late Report: Failure to submit 2008-2009 annual report by July 1, 2009 deadline Regional Board staff extended the submission date from July 1 to 4PM on August 3 of 2009. The annual report 1st Notice of Non-Compliance was sent out for this site, since the report was not received before this extended deadline. Sending the 1st Notice of Non-Compliance letter Annual Report Non-Compliance Issue(s) inspection: courtesy phone call for 08-09 annual report 2nd NNC letter. Staff contacted Barney Northcote (951-277-1675), and left a message with the receptionist, indicating about the site's non-compliance. Mr. Northcote was not in on this day, but staff did instruct the receptionist to pass along the message to submit the annual report in before October 8, 2009, to prevent any penalty. The receptionist will forward the staff's request, as well as have him contact staff back. Awaiting for the annual report submission. Staff's sending out 2nd NNC letter sentout via regular mail, after an extended allotment of time to submit the annual report in since 11/10/2009 hand delivery of the 1st NNC certified mail. Staff was unable to deliver certified mail to the location several times in the past, although the business is still active. Staff will send the 2nd NNC via regular mail.
Violation Division:	Water Boards
Violation Program:	INDSTW
Violation Source:	SMARTS

Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	09-02-2015
Citation:	HSC 6.5 25189.5(a) - California Health and Safety Code, Chapter 6.5, Section(s) 25189.5(a)
Violation Description:	Failure to properly dispose of hazardous waste at an authorized location.
Violation Notes:	Returned to compliance on 12/18/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS

Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	07-01-2012
Citation:	2014-0057-DWQ - Industrial General Permit
Violation Description:	SW - Late Report
Violation Notes:	2011-2012 annual report late submission Site has not submit the 2011-2012 annual report by 07/02/2012. - 1st Notice of Non-Compliance sent on 08/09/2012, via certified mail to facility, CC to owner.
Violation Division:	Water Boards
Violation Program:	INDSTW
Violation Source:	SMARTS

Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	09-02-2015
Citation:	HSC 6.5 25163(a) - California Health and Safety Code, Chapter 6.5,

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

	Section(s) 25163(a)
Violation Description:	Failure to use a registered hazardous waste hauler to transport hazardous waste.
Violation Notes:	Returned to compliance on 12/18/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	09-02-2015
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Administration/Documentation - General
Violation Notes:	Returned to compliance on 12/18/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	07-29-2010
Citation:	2014-0057-DWQ - Industrial General Permit
Violation Description:	SW - Late Report
Violation Notes:	2009-2010 Annual Report was not received by July 1, 2010. Certified letter was sent to facility address to Dan Hicks the carbon copy of the letter was sent to the owner, Barney Northcote. Both letters were sent out on 7/29/2010. 2009-2010 Annual Report was not received by July 1, 2010. Certified letter was sent to facility address to Barney Northcote or Dan Hicks the carbon copy of the letter was sent to the owner, Dan Hicks. Both letters were sent out on 9/22/2010.
Violation Division:	Water Boards
Violation Program:	INDSTW
Violation Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	09-02-2015
Citation:	HSC 6.5 25160.2 - California Health and Safety Code, Chapter 6.5, Section(s) 25160.2
Violation Description:	Failure to meet any of the following consolidated manifest requirements: 1) Legible receipts for each quantity of hazardous waste that is received from a generator, 2) The generator's information (name, address, identification number, contact person, telephone number of the generator, the signature of the generator or the generator's representative), 3) Date of the shipment, 4) The manifest number, 5) The volume or quantity of each waste stream received, 6) The name, address, and identification number of the authorized facility to which the hazardous waste will be transported, 7) The transporter's information (name, address, and identification number, the driver's signature), 8) A statement, signed by the generator, certifying that the generator has established a program to reduce the volume or quantity and toxicity of the hazardous waste to the degree economically practicable. 9) The generator shall retain each receipt for at least three years.
Violation Notes:	Returned to compliance on 12/18/2015.
Violation Division:	Riverside County Department of Env Health

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Violation Program:	HW
Violation Source:	CERS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	07-25-2011
Citation:	2014-0057-DWQ - Industrial General Permit
Violation Description:	SW - Late Report
Violation Notes:	2010-2011 Annual Report non-submission: Annual report was received by the Regional Board or the State Board by 07/01/2011. 1st Notice of Non-Compliance sent out to facility address, and a copy letter sent to the owner, provided in the SMARTS database, on 07/25/2011.
Violation Division:	Water Boards
Violation Program:	INDSTW
Violation Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	09-02-2015
Citation:	22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description:	Failure to properly label hazardous waste accumulation containers with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.
Violation Notes:	Returned to compliance on 12/18/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	09-02-2015
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Riverside County Department of Env Health
Eval Program:	HW
Eval Source:	CERS
Eval General Type:	Other/Unknown
Eval Date:	12-18-2015
Violations Found:	No
Eval Type:	Other, not routine, done by local agency
Eval Notes:	Not reported
Eval Division:	Riverside County Department of Env Health
Eval Program:	HMRRP
Eval Source:	CERS
Eval General Type:	Case Development Inspection
Eval Date:	11-10-2009
Violations Found:	No
Eval Type:	Industrial Storm Water Enforcement Follow-up
Eval Notes:	Enforcement Follow-up inspection: 2nd NNC letter was sent, and received by site, but the 2008-2009 annual report was not received as of today. Staff checking on site’s status. Staff arrived at 1112 hours: On arrival, staff noted that the site is still in business.

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Staff discussed the situation with Mr. Dan Hicks. He was uncertain of the annual report requirement, since this is his first year taking over the paperwork. His old secretary was the one to perform the administrative work, but after downsizing, the task was passed on to him, without a clue on how to approach this. His partner, Barney Northcote, received the letters, but did not forward the letters to him for response. Staff showed Mr. Hicks the proper website for form download, and to apply for an online annual report data submission. Mr. Northcote stated that he will submit the annual report before the month ends as he will gather the data from his partner. The site is an open pit quarry. Await for the annual report.

Eval Division: Water Boards
Eval Program: INDSTW
Eval Source: SMARTS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-02-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: APSA
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 07-16-2009
Violations Found: No
Eval Type: Construction Storm Water Compliance Evaluation
Eval Notes: B Type compliance (no sampling) inspection The site has many sources of sediment. There is one obvious location where run-off is discharged where there is a 8" diameter plastic standpipe for over flow. The operations manager Dan Hicks didn't know what the GIP was, anything about a SWPPP or sampling. One of the owners Hamid Soroosh was there too and he didn't know about the SWPPP and there was no SWPPP on site. The standpipe overflows into a pipe that goes under a small levee and the discharge point is on the stream side of the levee, but was obscured by vegetation. Sent permittee email regarding the violations asking to obtain compliance.
Eval Division: Water Boards
Eval Program: INDSTW
Eval Source: SMARTS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 09-02-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Case Development Inspection
Eval Date: 09-28-2009
Violations Found: No
Eval Type: Industrial Storm Water Enforcement Follow-up
Eval Notes: Annual Report Non-Compliance Issue(s) inspection: This is a phone call reminder for the facility to submit the 08-09 annual report as stated

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

in the 2nd NNC letter.. Staff contacted Barney Northcote (951-277-1675), and left a message with the receptionist, indicating about the site's non-compliance. Mr. Northcote was not in on this day, but staff did instruct the receptionist to pass along the message to submit the annual report in before October 8, 2009, to prevent any penalty. The receptionist will forward the staff's request, as well as have him contact staff back. Awaiting for the annual report submission.

Eval Division: Water Boards
Eval Program: INDSTW
Eval Source: SMARTS

Enforcement Action:
Site ID: 99317
Site Name: BNI-Harlow Quarry
Site Address: 9001 CAJALCO RD
Site City: CORONA
Site Zip: 92883
Enf Action Date: 01-04-2011
Enf Action Type: Industrial Storm Water Enforcement
Enf Action Description: Industrial Storm Water Enforcement
Enf Action Notes: 2009-2010 annual report non-submission status As of 1/4/11, the requested annual report had not been received for the year 2009-2010. Staff contacted Dan Hicks and Barney Northcote (951-277-1675 and 951-780-8319), and attempted to request the submission of 2009-2010 annual report status. Staff left a voicemail message indicating that the MMP will be drafted soon, if staff does not not here from him.
Enf Action Division: Water Boards
Enf Action Program: INDSTW
Enf Action Source: SMARTS

Site ID: 99317
Site Name: BNI-Harlow Quarry
Site Address: 9001 CAJALCO RD
Site City: CORONA
Site Zip: 92883
Enf Action Date: 07-25-2011
Enf Action Type: Industrial Storm Water Enforcement
Enf Action Description: Industrial Storm Water Enforcement
Enf Action Notes: 2010-2011 Annual Report non-submission: Annual report was received by the Regional Board or the State Board by 07/01/2011. 1st Notice of Non-Compliance sent out to facility address, and a copy letter sent to the owner, provided in the SMARTS database, on 07/25/2011.
Enf Action Division: Water Boards
Enf Action Program: INDSTW
Enf Action Source: SMARTS

Site ID: 99317
Site Name: BNI-Harlow Quarry
Site Address: 9001 CAJALCO RD
Site City: CORONA
Site Zip: 92883
Enf Action Date: 07-29-2010
Enf Action Type: Industrial Storm Water Enforcement
Enf Action Description: Industrial Storm Water Enforcement
Enf Action Notes: 2009-2010 Annual Report was not received by July 1, 2010. Certified letter was sent to facility address to Dan Hicks the carbon copy of

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

	the letter was sent to the owner, Barney Northcote. Both letters were sent out on 7/29/2010.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	08-03-2009
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	Annual Report Non-Compliance Issue(s) inspection Late Report: Failure to submit 2008-2009 annual report by July 1, 2009 deadline Regional Board staff extended the submission date from July 1 to 4PM on August 3 of 2009. The annual report 1st Notice of Non-Compliance was sent out for this site, since the report was not received before this extended deadline. Sending the 1st Notice of Non-Compliance letter
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	08-09-2012
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2011-2012 annual report late submission Site has not submit the 2011-2012 annual report by 07/02/2012. - 1st Notice of Non-Compliance sent on 08/09/2012, via certified mail to facility, CC to owner.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	09-02-2015
Enf Action Type:	Notice of Violation (Unified Program)
Enf Action Description:	Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:	Not reported
Enf Action Division:	Riverside County Department of Env Health
Enf Action Program:	HMRRP
Enf Action Source:	CERS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Enf Action Date:	09-02-2015
Enf Action Type:	Notice of Violation (Unified Program)
Enf Action Description:	Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:	Not reported
Enf Action Division:	Riverside County Department of Env Health
Enf Action Program:	HW
Enf Action Source:	CERS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	09-12-2011
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2010-2011 Annual Report non-submission: Annual report was received by the Regional Board or the State Board after the 1st Notice of Non-Compliance letter was sent out. Due date for the late annual report submission, indicated by 1st Notice of Non-Compliance letter, was 08/25/2011. 2nd Notice of Non-Compliance sent out to owner address (since the certified mail to the facility failed), and a copy letter sent to the facility (to be dropped in a mailbox if available), provided in the SMARTS database on 09/12/2011.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	09-22-2010
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2009-2010 Annual Report was not received by July 1, 2010. Certified letter was sent to facility address to Dan Hicks the carbon copy of the letter was sent to the owner, Barney Northcote or Dan Hicks. Both letters were sent out on 9/22/2010. Certified mail returned date:
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	09-28-2009
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	Annual Report Non-Compliance Issue(s) inspection: courtesy phone call for 08-09 annual report 2nd NNC letter. Staff contacted Barney Northcote (951-277-1675), and left a message with the receptionist, indicating about the site's non-compliance. Mr. Northcote was not in on this day, but staff did instruct the receptionist to pass along the

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

	message to submit the annual report in before October 8, 2009, to prevent any penalty. The receptionist will forward the staff's request, as well as have him contact staff back.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	09-28-2009
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	Annual Report Non-Compliance Issue(s) inspection: courtesy phone call for 08-09 annual report 2nd NNC letter. Staff contacted Barney Northcote (951-277-1675), and left a message with the receptionist, indicating about the site's non-compliance. Mr. Northcote was not in on this day, but staff did instruct the receptionist to pass along the message to submit the annual report in before October 8, 2009, to prevent any penalty. The receptionist will forward the staff's request, as well as have him contact staff back. Awaiting for the annual report submission.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	10-26-2010
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	Staff's attemting to contact either Mr. Barney Northcote or Dan Hicks (951-780-8319) in regards to the outstanding 2009-2010 annual report. At 15:33, staff discussed the issue with Mr. Northcote. Mr. Northcote gave staff Dan Hicks' facility contact number, since Mr Hicks is the one to communicate with in regards to site's compliance. Staff contacted Dan Hicks (951-277-1675) at 15:40, and discussed the issue. He indicated that he set up the SMARTS account for the corporate office to use, and expected HQ to complete the annual report. He will contact corporate office and verify what the situation is. Staff will be awaiting for the answer.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	11-04-2010
Enf Action Type:	Industrial Storm Water Enforcement

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2009-2010 annual report enforcement: Contact Dan Hicks (951-277-1675) at 12:05PM and left a message, attempting to get some information about the site's 2009-2010 annual report submission. Staff did not receive any follow-up phone call from Mr. Hicks about HQ responsibility to submit the annual report. Staff will await for Mr. Hicks to call back.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	11-10-2010
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2009-2010 annual report enforcement: Staff attempted to contact Dan Hicks (951-277-1675) at 02:37PM and left a message with the receptionist, attempting to get some information about the site's 2009-2010 annual report submission. Staff did not receive any follow-up phone call from Mr. Hicks about HQ responsibility to submit the annual report. Staff will await for Mr. Hicks to call back.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	12-03-2009
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	Staff's sending out 2nd NNC letter sentout via regular mail, after an extended allotment of time to submit the annual report in since 11/10/2009 hand delivery of the 1st NNC certified mail. Staff was unable to deliver certified mail to the location several times in the past, although the business is still active. Staff will send the 2nd NNC via regular mail.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	12-14-2010
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2009-2010 annual report non-submission status As of today, the requested annual report had not been received for the year 2009-2010.

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Staff called and discussed with Mr. Dan Hicks (951-277-1675), indicating that this was last reminder before drafting the MMP, if the annual report is not received by 12/31/2010

Enf Action Division: Water Boards
Enf Action Program: INDSTW
Enf Action Source: SMARTS

Affiliation:

Affiliation Type Desc: CUPA District
Entity Name: Riverside Cnty Env Health
Entity Title: Not reported
Affiliation Address: 4065 County Circle Drive, Room 104
Affiliation City: Riverside
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92503
Affiliation Phone: (951) 358-5055

Affiliation Type Desc: Environmental Contact
Entity Name: BARNEY NORTHCOTE
Entity Title: Not reported
Affiliation Address: 16805 Evening Star Rd
Affiliation City: Riverside
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92506
Affiliation Phone: Not reported

Affiliation Type Desc: Operator
Entity Name: BARNEY NORTHCOTE
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (951) 780-8319

Affiliation Type Desc: Parent Corporation
Entity Name: BNI-Harlow Quarry
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Property Owner
Entity Name: Cajalco Road Quarry
Entity Title: Not reported
Affiliation Address: 200 S. Main St. Suite 200
Affiliation City: Corona
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 92882
Affiliation Phone: (951) 760-4241

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Affiliation Type Desc:	Document Preparer
Entity Name:	Sherril Castano
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	16805 Evening Star Rd
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92506
Affiliation Phone:	Not reported

Affiliation Type Desc:	Legal Owner
Entity Name:	BARNEY NORTHCOTE
Entity Title:	Not reported
Affiliation Address:	16805 Evening Star Rd
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92506
Affiliation Phone:	(951) 780-8319

Affiliation Type Desc:	Owner/Operator
Entity Name:	Barney Norhtcote Incorporated
Entity Title:	Operator
Affiliation Address:	16805 Evening Star Rd
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92506
Affiliation Phone:	Not reported

Affiliation Type Desc:	Identification Signer
Entity Name:	Sherril Castano
Entity Title:	Office Manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Site ID:	342043
CERS ID:	60000738
Site Name:	RANCHO SERRANO HIGH
CERS Description:	School Investigation

Affiliation:

Affiliation Type Desc:	Supervisor

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Entity Name: SHAHIR HADDAD
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Site ID: 486427
CERS ID: 110002058503
Site Name: PAUL HUBBS CONSTRUCTION COMPANY
CERS Description: US EPA Air Emission Inventory System (EIS)

Site ID: 490627
CERS ID: 831068
Site Name: ROBERTSONS CORONA ROCK PLANT
CERS Description: Industrial Facility Storm Water

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 04-25-2017
Violations Found: No
Eval Type: Industrial Storm Water Compliance Evaluation
Eval Notes: SWPPP present. The last BMP inspection was in February, the March inspection was missed, will do the April inspection soon. There is another rock plant at the site run by BMI. The discharge from both plants is at the Robertson's discharge point.
Eval Division: Water Boards
Eval Program: INDSTW
Eval Source: SMARTS

Affiliation:
Affiliation Type Desc: Owner/Operator
Entity Name: Robertsons Ready Mix
Entity Title: Operator
Affiliation Address: PO Box 3600
Affiliation City: Corona
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92878
Affiliation Phone: Not reported

Site ID: 274782
CERS ID: 10626181
Site Name: ROBERTSON'S CORONA ROCK PLANT
CERS Description: Chemical Storage Facilities

Violations:
Site ID: 274782
Site Name: Robertson's Corona Rock Plant
Violation Date: 11-03-2015
Citation: HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description: Failure to complete and electronically submit a site map with all required content.

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Violation Notes:	Returned to compliance on 02/26/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	274782
Site Name:	Robertson's Corona Rock Plant
Violation Date:	11-03-2015
Citation:	HSC 6.5 25163(a) - California Health and Safety Code, Chapter 6.5, Section(s) 25163(a)
Violation Description:	Failure to use a registered hazardous waste hauler to transport hazardous waste.
Violation Notes:	Returned to compliance on 02/26/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS
Site ID:	274782
Site Name:	Robertson's Corona Rock Plant
Violation Date:	11-03-2015
Citation:	HSC 6.11 25404.1 - California Health and Safety Code, Chapter 6.11, Section(s) 25404.1
Violation Description:	Failure to obtain and/or maintain an active hazardous waste generator permit.
Violation Notes:	Returned to compliance on 02/26/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS
Site ID:	274782
Site Name:	Robertson's Corona Rock Plant
Violation Date:	11-03-2015
Citation:	HSC 6.11 25404.1 - California Health and Safety Code, Chapter 6.11, Section(s) 25404.1
Violation Description:	Failure to maintain a valid permit.
Violation Notes:	Returned to compliance on 02/26/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	APSA
Violation Source:	CERS
Site ID:	274782
Site Name:	Robertson's Corona Rock Plant
Violation Date:	11-03-2015
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Administration/Documentation - General
Violation Notes:	Returned to compliance on 02/26/2016.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	274782
Site Name:	Robertson's Corona Rock Plant
Violation Date:	11-03-2015
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to complete and electronically submit hazardous material

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

inventory information for all reportable hazardous materials on site at or above reportable quantities.
Violation Notes: Returned to compliance on 02/26/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: HMRRP
Violation Source: CERS

Site ID: 274782
Site Name: Robertson's Corona Rock Plant
Violation Date: 11-03-2015
Citation: 22 CCR 12 66262.20 - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.20
Violation Description: Failure to prepare a hazardous waste manifest for the transport of a hazardous waste for off-site transfer, treatment, storage, or disposal.
Violation Notes: Returned to compliance on 02/26/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Site ID: 274782
Site Name: Robertson's Corona Rock Plant
Violation Date: 11-03-2015
Citation: HSC 6.67 25270.6(b) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.6(b)
Violation Description: Failure to pay the APSA Program fee.
Violation Notes: Returned to compliance on 02/26/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: APSA
Violation Source: CERS

Site ID: 274782
Site Name: Robertson's Corona Rock Plant
Violation Date: 11-03-2015
Citation: 22 CCR 12 66262.40(a) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.40(a)
Violation Description: Failure to maintain uniform hazardous waste manifest, consolidated manifest, or bills of lading copies for three years.
Violation Notes: Returned to compliance on 02/26/2016.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 11-03-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: New Facility Inspection- Robertson's Corona Rock Plant 9001 Cajalco Rd Corona CA 92883
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 11-03-2015
Violations Found: Yes

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Eval Type:	Routine done by local agency
Eval Notes:	New Inspection Robertson's Corona Rock Plant 9001 Cajalco Rd Corona CA 92883
Eval Division:	Riverside County Department of Env Health
Eval Program:	APSA
Eval Source:	CERS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	11-03-2015
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	New Inspection Robertson's Corona Rock Plant 9001 Cajalco Rd Corona CA 92883
Eval Division:	Riverside County Department of Env Health
Eval Program:	HW
Eval Source:	CERS

Enforcement Action:

Site ID:	274782
Site Name:	Robertson's Corona Rock Plant
Site Address:	9001 CAJALCO ROAD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	11-03-2015
Enf Action Type:	Notice of Violation (Unified Program)
Enf Action Description:	Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:	Not reported
Enf Action Division:	Riverside County Department of Env Health
Enf Action Program:	APSA
Enf Action Source:	CERS
Site ID:	274782
Site Name:	Robertson's Corona Rock Plant
Site Address:	9001 CAJALCO ROAD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	11-03-2015
Enf Action Type:	Notice of Violation (Unified Program)
Enf Action Description:	Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:	Not reported
Enf Action Division:	Riverside County Department of Env Health
Enf Action Program:	HMRRP
Enf Action Source:	CERS
Site ID:	274782
Site Name:	Robertson's Corona Rock Plant
Site Address:	9001 CAJALCO ROAD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	11-03-2015
Enf Action Type:	Notice of Violation (Unified Program)
Enf Action Description:	Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:	Not reported
Enf Action Division:	Riverside County Department of Env Health
Enf Action Program:	HW
Enf Action Source:	CERS

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Affiliation:

Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055

Affiliation Type Desc:	Environmental Contact
Entity Name:	Jackie McEvoy
Entity Title:	Not reported
Affiliation Address:	P.O. Box 3600
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92882
Affiliation Phone:	Not reported

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	P.O. Box 3600
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92878
Affiliation Phone:	Not reported

Affiliation Type Desc:	Legal Owner
Entity Name:	Robertson’s Ready Mix
Entity Title:	Not reported
Affiliation Address:	P.O. Box 3600
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92882
Affiliation Phone:	(951) 493-6500

Affiliation Type Desc:	Operator
Entity Name:	Robertson’s Ready Mix
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(951) 493-6500

Affiliation Type Desc:	Parent Corporation
Entity Name:	ROBERTSON’S
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Jackie McEvoy
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Document Preparer
Entity Name:	Jackie McEvoy
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Site ID:	99317
CERS ID:	734724
Site Name:	BNI-HARLOW QUARRY
CERS Description:	Industrial Facility Storm Water

Violations:

Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	09-02-2015
Citation:	HSC 6.5 25250.19(c) - California Health and Safety Code, Chapter 6.5, Section(s) 25250.19(c)
Violation Description:	Failure to retain paperwork documenting disposal of used oil for three years.
Violation Notes:	Returned to compliance on 12/18/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	08-03-2009
Citation:	2014-0057-DWQ - Industrial General Permit
Violation Description:	SW - Late Report
Violation Notes:	Annual Report Non-Compliance Issue(s) inspection Late Report: Failure to submit 2008-2009 annual report by July 1, 2009 deadline Regional Board staff extended the submission date from July 1 to 4PM on August 3 of 2009. The annual report 1st Notice of Non-Compliance was sent out for this site, since the report was not received before this extended deadline. Sending the 1st Notice of Non-Compliance letter Annual Report Non-Compliance Issue(s) inspection: courtesy phone call for 08-09 annual report 2nd NNC letter. Staff contacted Barney Northcote (951-277-1675), and left a message with the receptionist, indicating about the site's non-compliance. Mr. Northcote was not in on this day,

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

but staff did instruct the receptionist to pass along the message to submit the annual report in before October 8, 2009, to prevent any penalty. The receptionist will forward the staff's request, as well as have him contact staff back. Awaiting for the annual report submission. Staff's sending out 2nd NNC letter sentout via regular mail, after an extended allotment of time to submit the annual report in since 11/10/2009 hand delivery of the 1st NNC certified mail. Staff was unable to deliver certified mail to the location several times in the past, although the business is still active. Staff will send the 2nd NNC via regular mail.

Violation Division: Water Boards
Violation Program: INDSTW
Violation Source: SMARTS

Site ID: 99317
Site Name: BNI-Harlow Quarry
Violation Date: 09-02-2015
Citation: HSC 6.5 25189.5(a) - California Health and Safety Code, Chapter 6.5, Section(s) 25189.5(a)
Violation Description: Failure to properly dispose of hazardous waste at an authorized location.
Violation Notes: Returned to compliance on 12/18/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Site ID: 99317
Site Name: BNI-Harlow Quarry
Violation Date: 07-01-2012
Citation: 2014-0057-DWQ - Industrial General Permit
Violation Description: SW - Late Report
Violation Notes: 2011-2012 annual report late submission Site has not submit the 2011-2012 annual report by 07/02/2012. - 1st Notice of Non-Compliance sent on 08/09/2012, via certified mail to facility, CC to owner.
Violation Division: Water Boards
Violation Program: INDSTW
Violation Source: SMARTS

Site ID: 99317
Site Name: BNI-Harlow Quarry
Violation Date: 09-02-2015
Citation: HSC 6.5 25163(a) - California Health and Safety Code, Chapter 6.5, Section(s) 25163(a)
Violation Description: Failure to use a registered hazardous waste hauler to transport hazardous waste.
Violation Notes: Returned to compliance on 12/18/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Site ID: 99317
Site Name: BNI-Harlow Quarry
Violation Date: 09-02-2015
Citation: HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description: Business Plan Program - Administration/Documentation - General
Violation Notes: Returned to compliance on 12/18/2015.

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	07-29-2010
Citation:	2014-0057-DWQ - Industrial General Permit
Violation Description:	SW - Late Report
Violation Notes:	2009-2010 Annual Report was not received by July 1, 2010. Certified letter was sent to facility address to Dan Hicks the carbon copy of the letter was sent to the owner, Barney Northcote. Both letters were sent out on 7/29/2010. 2009-2010 Annual Report was not received by July 1, 2010. Certified letter was sent to facility address to Barney Northcote or Dan Hicks the carbon copy of the letter was sent to the owner, Dan Hicks. Both letters were sent out on 9/22/2010.
Violation Division:	Water Boards
Violation Program:	INDSTW
Violation Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	09-02-2015
Citation:	HSC 6.5 25160.2 - California Health and Safety Code, Chapter 6.5, Section(s) 25160.2
Violation Description:	Failure to meet any of the following consolidated manifest requirements: 1) Legible receipts for each quantity of hazardous waste that is received from a generator, 2) The generator's information (name, address, identification number, contact person, telephone number of the generator, the signature of the generator or the generator's representative), 3) Date of the shipment, 4) The manifest number, 5) The volume or quantity of each waste stream received, 6) The name, address, and identification number of the authorized facility to which the hazardous waste will be transported, 7) The transporter's information (name, address, and identification number, the driver's signature), 8) A statement, signed by the generator, certifying that the generator has established a program to reduce the volume or quantity and toxicity of the hazardous waste to the degree economically practicable. 9) The generator shall retain each receipt for at least three years.
Violation Notes:	Returned to compliance on 12/18/2015.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Violation Date:	07-25-2011
Citation:	2014-0057-DWQ - Industrial General Permit
Violation Description:	SW - Late Report
Violation Notes:	2010-2011 Annual Report non-submission: Annual report was received by the Regional Board or the State Board by 07/01/2011. 1st Notice of Non-Compliance sent out to facility address, and a copy letter sent to the owner, provided in the SMARTS database, on 07/25/2011.
Violation Division:	Water Boards
Violation Program:	INDSTW
Violation Source:	SMARTS

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Site ID: 99317
Site Name: BNI-Harlow Quarry
Violation Date: 09-02-2015
Citation: 22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description: Failure to properly label hazardous waste accumulation containers with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.
Violation Notes: Returned to compliance on 12/18/2015.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 09-02-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 12-18-2015
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Case Development Inspection
Eval Date: 11-10-2009
Violations Found: No
Eval Type: Industrial Storm Water Enforcement Follow-up
Eval Notes: Enforcement Follow-up inspection: 2nd NNC letter was sent, and received by site, but the 2008-2009 annual report was not received as of today. Staff checking on site's status. Staff arrived at 1112 hours: On arrival, staff noted that the site is still in business. Staff discussed the situation with Mr. Dan Hicks. He was uncertain of the annual report requirement, since this is his first year taking over the paperwork. His old secretary was the one to perform the administrative work, but after downsizing, the task was passed on to him, without a clue on how to approach this. His partner, Barney Northcote, received the letters, but did not forward the letters to him for response. Staff showed Mr. Hicks the proper website for form download, and to apply for an online annual report data submission. Mr. Northcote stated that he will submit the annual report before the month ends as he will gather the data from his partner. The site is an open pit quarry. Await for the annual report.
Eval Division: Water Boards
Eval Program: INDSTW
Eval Source: SMARTS

Eval General Type: Compliance Evaluation Inspection

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Eval Date:	06-02-2016
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Riverside County Department of Env Health
Eval Program:	APSA
Eval Source:	CERS
Eval General Type:	Other/Unknown
Eval Date:	07-16-2009
Violations Found:	No
Eval Type:	Construction Storm Water Compliance Evaluation
Eval Notes:	B Type compliance (no sampling) inspection The site has many sources of sediment. There is one obvious location where run-off is discharged where there is a 8" diameter plastic standpipe for over flow. The operations manager Dan Hicks didn't know what the GIP was, anything about a SWPPP or sampling. One of the owners Hamid Soroosh was there too and he didn't know about the SWPPP and there was no SWPPP on site. The standpipe overflows into a pipe that goes under a small levee and the discharge point is on the stream side of the levee, but was obscured by vegetation. Sent permittee email regarding the violations asking to obtain compliance.
Eval Division:	Water Boards
Eval Program:	INDSTW
Eval Source:	SMARTS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	09-02-2015
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Riverside County Department of Env Health
Eval Program:	HMRRP
Eval Source:	CERS
Eval General Type:	Case Development Inspection
Eval Date:	09-28-2009
Violations Found:	No
Eval Type:	Industrial Storm Water Enforcement Follow-up
Eval Notes:	Annual Report Non-Compliance Issue(s) inspection: This is a phone call reminder for the facility to submit the 08-09 annual report as stated in the 2nd NNC letter.. Staff contacted Barney Northcote (951-277-1675), and left a message with the receptionist, indicating about the site's non-compliance. Mr. Northcote was not in on this day, but staff did instruct the receptionist to pass along the message to submit the annual report in before October 8, 2009, to prevent any penalty. The receptionist will forward the staff's request, as well as have him contact staff back. Awaiting for the annual report submission.
Eval Division:	Water Boards
Eval Program:	INDSTW
Eval Source:	SMARTS

Enforcement Action:

Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Site City:	CORONA
Site Zip:	92883
Enf Action Date:	01-04-2011
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2009-2010 annual report non-submission status As of 1/4/11, the requested annual report had not been received for the year 2009-2010. Staff contacted Dan Hicks and Barney Northcote (951-277-1675 and 951-780-8319), and attempted to request the submission of 2009-2010 annual report status. Staff left a voicemail message indicating that the MMP will be drafted soon, if staff does not not here from him.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS

Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	07-25-2011
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2010-2011 Annual Report non-submission: Annual report was received by the Regional Board or the State Board by 07/01/2011. 1st Notice of Non-Compliance sent out to facility address, and a copy letter sent to the owner, provided in the SMARTS database, on 07/25/2011.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS

Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	07-29-2010
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2009-2010 Annual Report was not received by July 1, 2010. Certified letter was sent to facility address to Dan Hicks the carbon copy of the letter was sent to the owner, Barney Northcote. Both letters were sent out on 7/29/2010.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS

Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	08-03-2009
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	Annual Report Non-Compliance Issue(s) inspection Late Report: Failure to submit 2008-2009 annual report by July 1, 2009 deadline Regional

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

	Board staff extended the submission date from July 1 to 4PM on August 3 of 2009. The annual report 1st Notice of Non-Compliance was sent out for this site, since the report was not received before this extended deadline. Sending the 1st Notice of Non-Compliance letter
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	08-09-2012
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2011-2012 annual report late submission Site has not submit the 2011-2012 annual report by 07/02/2012. - 1st Notice of Non-Compliance sent on 08/09/2012, via certified mail to facility, CC to owner.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	09-02-2015
Enf Action Type:	Notice of Violation (Unified Program)
Enf Action Description:	Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:	Not reported
Enf Action Division:	Riverside County Department of Env Health
Enf Action Program:	HMRRP
Enf Action Source:	CERS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	09-02-2015
Enf Action Type:	Notice of Violation (Unified Program)
Enf Action Description:	Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:	Not reported
Enf Action Division:	Riverside County Department of Env Health
Enf Action Program:	HW
Enf Action Source:	CERS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	09-12-2011
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Enf Action Notes:	2010-2011 Annual Report non-submission: Annual report was received by the Regional Board or the State Board after the 1st Notice of Non-Compliance letter was sent out. Due date for the late annual report submission, indicated by 1st Notice of Non-Compliance letter, was 08/25/2011. 2nd Notice of Non-Compliance sent out to owner address (since the certified mail to the facility failed), and a copy letter sent to the facility (to be dropped in a mailbox if available), provided in the SMARTS database on 09/12/2011.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	09-22-2010
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2009-2010 Annual Report was not received by July 1, 2010. Certified letter was sent to facility address to Dan Hicks the carbon copy of the letter was sent to the owner, Barney Northcote or Dan Hicks. Both letters were sent out on 9/22/2010. Certified mail returned date:
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	09-28-2009
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	Annual Report Non-Compliance Issue(s) inspection: courtesy phone call for 08-09 annual report 2nd NNC letter. Staff contacted Barney Northcote (951-277-1675), and left a message with the receptionist, indicating about the site's non-compliance. Mr. Northcote was not in on this day, but staff did instruct the receptionist to pass along the message to submit the annual report in before October 8, 2009, to prevent any penalty. The receptionist will forward the staff's request, as well as have him contact staff back.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	09-28-2009
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	Annual Report Non-Compliance Issue(s) inspection: courtesy phone call

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

	for 08-09 annual report 2nd NNC letter. Staff contacted Barney Northcote (951-277-1675), and left a message with the receptionist, indicating about the site's non-compliance. Mr. Northcote was not in on this day, but staff did instruct the receptionist to pass along the message to submit the annual report in before October 8, 2009, to prevent any penalty. The receptionist will forward the staff's request, as well as have him contact staff back. Awaiting for the annual report submission.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	10-26-2010
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	Staff's attemting to contact either Mr. Barney Northcote or Dan Hicks (951-780-8319) in regards to the outstanding 2009-2010 annual report. At 15:33, staff discussed the issue with Mr. Northcote. Mr. Northcote gave staff Dan Hicks' facility contact number, since Mr Hicks is the one to communicate with in regards to site's compliance. Staff contacted Dan Hicks (951-277-1675) at 15:40, and discussed the issue. He indicated that he set up the SMARTS account for the corporate office to use, and expected HQ to complete the annual report. He will contact corporate office and verify what the situation is. Staff will be awaiting for the answer.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	11-04-2010
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2009-2010 annual report enforcement: Contact Dan Hicks (951-277-1675) at 12:05PM and left a message, attempting to get some information about the site's 2009-2010 annual report submission. Staff did not receive any follow-up phone call from Mr. Hicks about HQ responsibility to submit the annual report. Staff will await for Mr. Hicks to call back.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Enf Action Date:	11-10-2010
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2009-2010 annual report enforcement: Staff attempted to contact Dan Hicks (951-277-1675) at 02:37PM and left a message with the receptionist, attempting to get some information about the site's 2009-2010 annual report submission. Staff did not receive any follow-up phone call from Mr. Hicks about HQ responsibility to submit the annual report. Staff will await for Mr. Hicks to call back.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	12-03-2009
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	Staff's sending out 2nd NNC letter sentout via regular mail, after an extended allotment of time to submit the annual report in since 11/10/2009 hand delivery of the 1st NNC certified mail. Staff was unable to deliver certified mail to the location several times in the past, although the business is still active. Staff will send the 2nd NNC via regular mail.
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS
Site ID:	99317
Site Name:	BNI-Harlow Quarry
Site Address:	9001 CAJALCO RD
Site City:	CORONA
Site Zip:	92883
Enf Action Date:	12-14-2010
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	2009-2010 annual report non-submission status As of today, the requested annual report had not been received for the year 2009-2010. Staff called and discussed with Mr. Dan Hicks (951-277-1675), indicating that this was last reminder before drafting the MMP, if the annual report is not received by 12/31/2010
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS

Affiliation:

Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Affiliation Phone:	(951) 358-5055
Affiliation Type Desc:	Environmental Contact
Entity Name:	BARNEY NORTHCOTE
Entity Title:	Not reported
Affiliation Address:	16805 Evening Star Rd
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92506
Affiliation Phone:	Not reported
Affiliation Type Desc:	Operator
Entity Name:	BARNEY NORTHCOTE
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(951) 780-8319
Affiliation Type Desc:	Parent Corporation
Entity Name:	BNI-Harlow Quarry
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Property Owner
Entity Name:	Cajalco Road Quarry
Entity Title:	Not reported
Affiliation Address:	200 S. Main St. Suite 200
Affiliation City:	Corona
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92882
Affiliation Phone:	(951) 760-4241
Affiliation Type Desc:	Document Preparer
Entity Name:	Sherril Castano
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	16805 Evening Star Rd
Affiliation City:	Riverside

ROBERTSONS CORONA ROCK PLANT (Continued) **S105939060**

Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92506
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	BARNEY NORTHCOTE
Entity Title:	Not reported
Affiliation Address:	16805 Evening Star Rd
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92506
Affiliation Phone:	(951) 780-8319
Affiliation Type Desc:	Owner/Operator
Entity Name:	Barney Norhtcote Incorporated
Entity Title:	Operator
Affiliation Address:	16805 Evening Star Rd
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92506
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Sherril Castano
Entity Title:	Office Manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

41
East
1/2-1
0.617 mi.
3256 ft.

LISTON ALUMINUM COMPANY SITE
9107 CAJALCO RD
CORONA, CA 92881

RESPONSE **S102008376**
ENVIROSTOR **N/A**
HIST Cal-Sites
CERS

Relative:
Lower

Actual:
816 ft.

RESPONSE:

Facility ID:	33330023
Site Type:	State Response
Site Type Detail:	State Response or NPL
Acres:	5
National Priorities List:	NO
Cleanup Oversight Agencies:	NONE SPECIFIED
Lead Agency Description:	Not reported
Project Manager:	Not reported
Supervisor:	Emad Yemut
Division Branch:	Cleanup Cypress
Site Code:	400977
Site Mgmt. Req.:	NONE SPECIFIED
Assembly:	67
Senate:	28
Special Program Status:	Not reported

LISTON ALUMINUM COMPANY SITE (Continued) **S102008376**

Status:	Certified
Status Date:	10/18/1985
Restricted Use:	NO
Funding:	Responsible Party
Latitude:	33.82385
Longitude:	-117.4995
APN:	NONE SPECIFIED
Past Use:	RECYCLING - SCRAP METAL
Potential COC :	Arsenic Lead Aluminum Cadmium and compounds Chromium III Chromium VI Copper and compounds Zinc
Confirmed COC:	Arsenic Lead Aluminum Cadmium and compounds Chromium III Chromium VI Copper and compounds Zinc
Potential Description:	SOIL
Alias Name:	110033607755
Alias Type:	EPA (FRS #)
Alias Name:	400977
Alias Type:	Project Code (Site Code)
Alias Name:	33330023
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Certification
Completed Date:	10/18/1985
Comments:	23 tons of hazardous waste removed.
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

ENVIROSTOR:

Facility ID:	33330023
Status:	Certified
Status Date:	10/18/1985
Site Code:	400977
Site Type:	State Response
Site Type Detailed:	State Response or NPL
Acres:	5
NPL:	NO
Regulatory Agencies:	NONE SPECIFIED
Lead Agency:	NONE SPECIFIED
Program Manager:	Not reported
Supervisor:	Emad Yemut
Division Branch:	Cleanup Cypress
Assembly:	67
Senate:	28
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Responsible Party

LISTON ALUMINUM COMPANY SITE (Continued) **S102008376**

Latitude: 33.82385
Longitude: -117.4995
APN: NONE SPECIFIED
Past Use: RECYCLING - SCRAP METAL
Potential COC: Arsenic Lead Aluminum Cadmium and compounds Chromium III Chromium VI Copper and compounds Zinc
Confirmed COC: Arsenic Lead Aluminum Cadmium and compounds Chromium III Chromium VI Copper and compounds Zinc
Potential Description: SOIL
Alias Name: 110033607755
Alias Type: EPA (FRS #)
Alias Name: 400977
Alias Type: Project Code (Site Code)
Alias Name: 33330023
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Certification
Completed Date: 10/18/1985
Comments: 23 tons of hazardous waste removed.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

Calsite:
Region: CYPRESS
Facility ID: 33330023
Facility Type: RP
Type: RESPONSIBLE PARTY
Branch: SB
Branch Name: SO CAL - CYPRESS
File Name: Not reported
State Senate District: 10181985
Status: CERTIFIED AS HAVING BEEN REMEDIED SATISFACTORILY UNDER DTSC OVERSIGHT
Status Name: CERTIFIED
Lead Agency: N/A
NPL: Not reported
SIC Code: 33
SIC Name: MANU - PRIMARY METAL INDUSTRIES
Access: Not reported
Cortese: Not reported
Hazardous Ranking Score: Not reported
Date Site Hazard Ranked: Not reported
Groundwater Contamination: Not reported
Staff Member Responsible for Site: Not reported
Supervisor Responsible for Site: Not reported
Region Water Control Board: Not reported
Region Water Control Board Name: Not reported

LISTON ALUMINUM COMPANY SITE (Continued) **S102008376**

Lat/Long Direction:	Not reported
Lat/Long (dms):	0 0 0 / 0 0 0
Lat/long Method:	Not reported
Lat/Long Description:	Not reported
State Assembly District Code:	66
State Senate District Code:	37
Facility ID:	33330023
Activity:	CERT
Activity Name:	CERTIFICATION
AWP Code:	Not reported
Proposed Budget:	0
AWP Completion Date:	Not reported
Revised Due Date:	Not reported
Comments Date:	10181985
Est Person-Yrs to complete:	0
Estimated Size:	Not reported
Request to Delete Activity:	Not reported
Activity Status:	CERT
Definition of Status:	CERTIFIED
Liquids Removed (Gals):	0
Liquids Treated (Gals):	0
Action Included Capping:	Not reported
Well Decommissioned:	Not reported
Action Included Fencing:	Not reported
Removal Action Certification:	Not reported
Activity Comments:	Not reported
For Commercial Reuse:	0
For Industrial Reuse:	0
For Residential Reuse:	0
Unknown Type:	0
Alternate Address:	9107 CAJALCO ROAD
Alternate City,St,Zip:	CORONA, CA 91719
Alternate Address:	9107 CAJALCO RD
Alternate City,St,Zip:	CORONA, CA 92881
Background Info:	The site is adjacent to a stream bed and near drinking water wells. Approximately 25 tons of hazardous waste were deposited at Liston Aluminum Company Site in June, 1984. This material was sampled, tested and found to contain hazardous levels of zinc and lead.
Comments Date:	07011985
Comments:	DTSC sampled site. A Notice of Violation was issued at that
Comments Date:	07011985
Comments:	time which ordered Liston to remove this hazardous waste. A
Comments Date:	07011985
Comments:	cleanup letter was subsequently issued. A variance to haul
Comments Date:	07011985
Comments:	and reprocess this hazardous waste was granted to responsibl
Comments Date:	07011985
Comments:	party.
Comments Date:	10181985
Comments:	23 tons of hazardous waste removed.
ID Name:	CALSTARS CODE
ID Value:	400977
Alternate Name:	LISTON ALUMINUM COMPANY SITE
Alternate Name:	Not reported
Special Programs Code:	Not reported
Special Programs Name:	Not reported

LISTON ALUMINUM COMPANY SITE (Continued) **S102008376**

CERS TANKS:
- Site ID: 339359
- CERS ID: 33330023
- Site Name: LISTON ALUMINUM COMP
- CERS Description: State Response

Affiliation:
- Affiliation Type Desc: Supervisor
- Entity Name: EMAD YEMUT
- Entity Title: Not reported
- Affiliation Address: Not reported
- Affiliation City: Not reported
- Affiliation State: Not reported
- Affiliation Country: Not reported
- Affiliation Zip: Not reported
- Affiliation Phone: Not reported

42
NNW
1/2-1
0.753 mi.
3975 ft.

EL CERRITO ELEMENTARY SCHOOL **ENVIROSTOR** **S107736272**
7581 RUDELL ROAD **SCH** **N/A**
CORONA, CA 92881

Relative:
Higher

Actual:
890 ft.

ENVIROSTOR:
- Facility ID: 33010048
- Status: No Further Action
- Status Date: 05/17/2002
- Site Code: 404220
- Site Type: School Investigation
- Site Type Detailed: School
- Acres: 13
- NPL: NO
- Regulatory Agencies: SMBRP
- Lead Agency: SMBRP
- Program Manager: Kamili Siglowide
- Supervisor: Daniel Ziarkowski
- Division Branch: Southern California Schools & Brownfields Outreach
- Assembly: 60
- Senate: 31
- Special Program: Not reported
- Restricted Use: NO
- Site Mgmt Req: NONE SPECIFIED
- Funding: School District
- Latitude: 33.83616
- Longitude: -117.5254
- APN: NONE SPECIFIED
- Past Use: AGRICULTURAL - ROW CROPS
- Potential COC: Arsenic DDD DDE DDT
- Confirmed COC: NONE SPECIFIED
- Potential Description: SOIL
- Alias Name: CORONA-NORCO UNIFIED SCHOOL DISTRICT
- Alias Type: Alternate Name
- Alias Name: CORONA-NORCO USD-EL CERRITO ELEM. CNVRSN
- Alias Type: Alternate Name
- Alias Name: EL CERRITO ELEMENTARY SCHOOL EXPANSION
- Alias Type: Alternate Name
- Alias Name: 110021928422

EL CERRITO ELEMENTARY SCHOOL (Continued) **S107736272**

Alias Type: EPA (FRS #)
Alias Name: 404220
Alias Type: Project Code (Site Code)
Alias Name: 33010048
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 05/20/2002
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 05/20/2002
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Technical Report
Completed Date: 04/03/2002
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Workplan
Completed Date: 03/20/2002
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Inspections/Visit (Non LUR)
Completed Date: 03/22/2002
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 11/09/2001
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Public Participation
Completed Date: 05/12/2002
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

EL CERRITO ELEMENTARY SCHOOL (Continued) **S107736272**

SCH:

Facility ID:	33010048
Site Type:	School Investigation
Site Type Detail:	School
Site Mgmt. Req.:	NONE SPECIFIED
Acres:	13
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Kamili Siglowide
Supervisor:	Daniel Ziarkowski
Division Branch:	Southern California Schools & Brownfields Outreach
Site Code:	404220
Assembly:	60
Senate:	31
Special Program Status:	Not reported
Status:	No Further Action
Status Date:	05/17/2002
Restricted Use:	NO
Funding:	School District
Latitude:	33.83616
Longitude:	-117.5254
APN:	NONE SPECIFIED
Past Use:	AGRICULTURAL - ROW CROPS
Potential COC:	Arsenic, DDD, DDE, DDT
Confirmed COC:	NONE SPECIFIED
Potential Description:	SOIL
Alias Name:	CORONA-NORCO UNIFIED SCHOOL DISTRICT
Alias Type:	Alternate Name
Alias Name:	CORONA-NORCO USD-EL CERRITO ELEM. CNVRSN
Alias Type:	Alternate Name
Alias Name:	EL CERRITO ELEMENTARY SCHOOL EXPANSION
Alias Type:	Alternate Name
Alias Name:	110021928422
Alias Type:	EPA (FRS #)
Alias Name:	404220
Alias Type:	Project Code (Site Code)
Alias Name:	33010048
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	05/20/2002
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Report
Completed Date:	05/20/2002
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported

EL CERRITO ELEMENTARY SCHOOL (Continued) **S107736272**

Completed Document Type: Technical Report
Completed Date: 04/03/2002
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Workplan
Completed Date: 03/20/2002
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Inspections/Visit (Non LUR)
Completed Date: 03/22/2002
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 11/09/2001
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Public Participation
Completed Date: 05/12/2002
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

Count: 6 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
CORONA	S107537949		CAJALCO RD-1/2 MI E OF TEMESCA		CDL
CORONA	S108985916	NWC OF ONTARIO & STATE	301 ONTARIO AVENUE		CPS-SLIC
CORONA	S109611842		TEMESCAL CANYON RD, 3/4 MILE N	92883	CDL
CORONA	S109611831		ON TEMESCAL CANYON RD, 1/4 MI	92883	CDL
CORONA	S107540863		TEMESCAL CANYON RD @ WEIRICK R	92883	CDL
CORONA	S107540862		TEMESCAL CANYON RD (@ HIGHWAY	92883	CDL

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 06/06/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 06/06/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 06/06/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 04/03/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/05/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 35

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/06/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 35

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/06/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 02/22/2019
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 41

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/10/2019
Next Scheduled EDR Contact: 08/26/2019
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/31/2019
Date Data Arrived at EDR: 02/04/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 32

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/29/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/31/2019
Date Data Arrived at EDR: 02/04/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 32

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/29/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/26/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 36

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 01/28/2019
Date Data Arrived at EDR: 01/29/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/30/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 01/28/2019
Date Data Arrived at EDR: 01/29/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/30/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/11/2019
Date Data Arrived at EDR: 02/12/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 21

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/14/2019
Next Scheduled EDR Contact: 08/26/2019
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)

Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 12/11/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Quarterly

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 10/10/2018
Date Data Arrived at EDR: 03/08/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/16/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 02/19/2019
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 11/01/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 09/24/2018
Date Data Arrived at EDR: 03/12/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 50
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 10/13/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 10/12/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/17/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)

Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 05/15/2017
Date Data Arrived at EDR: 05/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 136

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/25/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Varies

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases

UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/13/2019
Date Made Active in Reports: 04/03/2019
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Varies

UST: Active UST Facilities

Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 12/11/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Semi-Annually

MILITARY UST SITES: Military UST Sites (GEOTRACKER)

Military ust sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

AST: Aboveground Petroleum Storage Tank Facilities

A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/16/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 10/10/2018
Date Data Arrived at EDR: 03/08/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 54

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 10/17/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 11/07/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 11/01/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 10/12/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 09/24/2018
Date Data Arrived at EDR: 03/12/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 50

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 10/03/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142
Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27
Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 01/28/2019
Date Data Arrived at EDR: 01/29/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 35
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/30/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Quarterly

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/26/2019
Date Made Active in Reports: 04/29/2019
Number of Days to Update: 34
Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 12/17/2018
Date Data Arrived at EDR: 12/18/2018
Date Made Active in Reports: 01/11/2019
Number of Days to Update: 24
Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 06/04/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 04/25/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/13/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 48

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 03/26/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 34

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 05/09/2019
Next Scheduled EDR Contact: 08/26/2019
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land

A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 04/23/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 02/24/2019
Date Data Arrived at EDR: 02/26/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 50

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 01/28/2019
Date Data Arrived at EDR: 01/29/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/30/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/12/2018
Date Made Active in Reports: 08/06/2018
Number of Days to Update: 55

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 05/02/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 04/09/2019
Date Data Arrived at EDR: 04/11/2019
Date Made Active in Reports: 05/08/2019
Number of Days to Update: 27

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 04/11/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Quarterly

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/24/2019
Date Data Arrived at EDR: 02/26/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 50

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Quarterly

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 02/21/2019
Date Data Arrived at EDR: 02/22/2019
Date Made Active in Reports: 04/15/2019
Number of Days to Update: 52

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Varies

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 12/04/2018
Date Data Arrived at EDR: 12/06/2018
Date Made Active in Reports: 12/14/2018
Number of Days to Update: 8

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing
Aboveground storage tank sites

Date of Government Version: 09/11/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/11/2018
Number of Days to Update: 29

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 05/02/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Varies

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CERS TANKS: California Environmental Reporting System (CERS) Tanks
List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 04/09/2019
Date Data Arrived at EDR: 04/11/2019
Date Made Active in Reports: 05/08/2019
Number of Days to Update: 27

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 04/11/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Quarterly

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 02/28/2019
Date Data Arrived at EDR: 03/01/2019
Date Made Active in Reports: 04/02/2019
Number of Days to Update: 32

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 06/03/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 35

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 06/06/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 03/04/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 27

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 06/04/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/26/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 49

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 10/24/2018
Date Data Arrived at EDR: 01/24/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 40

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 03/07/2019
Date Data Arrived at EDR: 04/03/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 50

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 05/21/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/12/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/12/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63
Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/13/2019
Next Scheduled EDR Contact: 08/26/2019
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/26/2019
Date Made Active in Reports: 05/07/2019
Number of Days to Update: 42
Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88
Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 05/06/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73
Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 05/10/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 198
Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/22/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 01/10/2018
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 2

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/24/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 35

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 06/06/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 04/25/2019
Date Data Arrived at EDR: 05/02/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 06/06/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 03/20/2019
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 34

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/10/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 04/08/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016
Date Data Arrived at EDR: 09/08/2016
Date Made Active in Reports: 10/21/2016
Number of Days to Update: 43

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 06/07/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 06/07/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 05/24/2017
Date Data Arrived at EDR: 11/30/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 15
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 04/02/2019
Date Data Arrived at EDR: 04/02/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 42
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/02/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 12/03/2018
Date Data Arrived at EDR: 01/29/2019
Date Made Active in Reports: 03/21/2019
Number of Days to Update: 51

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 04/30/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 30

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/05/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/11/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 05/02/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 06/23/2017
Date Data Arrived at EDR: 10/11/2017
Date Made Active in Reports: 11/03/2017
Number of Days to Update: 23

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 26

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 06/06/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 11/27/2018
Date Data Arrived at EDR: 02/27/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 33

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 05/29/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/31/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/31/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 03/27/2019
Date Data Arrived at EDR: 03/28/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 34

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 03/21/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 02/15/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 03/15/2019
Number of Days to Update: 10

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 06/05/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Quarterly

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 04/07/2019
Date Data Arrived at EDR: 04/09/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 04/09/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 01/17/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 74

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Varies

DOCKET HWC: Hazardous Waste Compliance Docket Listing
A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 71
Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 02/19/2019
Date Data Arrived at EDR: 02/21/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 39
Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 05/21/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan
Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6
Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List
The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/26/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 36
Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

CUPA SAN FRANCISCO CO: CUPA Facility Listing
Cupa facilities

Date of Government Version: 04/18/2019
Date Data Arrived at EDR: 04/19/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 11
Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Varies

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing
list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 01/23/2019
Date Data Arrived at EDR: 02/26/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 34
Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 05/14/2019
Next Scheduled EDR Contact: 08/26/2019
Data Release Frequency: Varies

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 03/19/2019
Date Data Arrived at EDR: 03/22/2019
Date Made Active in Reports: 04/09/2019
Number of Days to Update: 18

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 05/23/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 03/01/2019
Date Data Arrived at EDR: 04/25/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 35

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 06/03/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Annually

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 02/27/2019
Date Data Arrived at EDR: 02/28/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 32

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 06/03/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Varies

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/20/2018
Date Made Active in Reports: 08/06/2018
Number of Days to Update: 47

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 03/22/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 11/01/2018
Date Data Arrived at EDR: 11/02/2018
Date Made Active in Reports: 12/13/2018
Number of Days to Update: 41

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/14/2019
Next Scheduled EDR Contact: 08/26/2019
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 01/10/2019
Date Data Arrived at EDR: 01/23/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 41

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 02/15/2019
Date Data Arrived at EDR: 02/19/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 14

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/09/2019
Next Scheduled EDR Contact: 08/26/2019
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 04/09/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 50

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 02/19/2019
Date Data Arrived at EDR: 02/20/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 13

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 05/21/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 02/19/2019
Date Data Arrived at EDR: 02/20/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 13

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/21/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/08/2019
Date Data Arrived at EDR: 04/09/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 51

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/09/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/12/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 34
Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 02/20/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 04/02/2019
Number of Days to Update: 28
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 06/04/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 02/11/2019
Date Data Arrived at EDR: 02/12/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 23
Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/14/2019
Next Scheduled EDR Contact: 08/26/2019
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 03/04/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 04/05/2019
Number of Days to Update: 31
Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 06/04/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/13/2019
Date Made Active in Reports: 04/29/2019
Number of Days to Update: 47
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 03/18/2019
Date Data Arrived at EDR: 03/19/2019
Date Made Active in Reports: 04/29/2019
Number of Days to Update: 41
Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 04/27/2018
Date Data Arrived at EDR: 06/13/2018
Date Made Active in Reports: 07/17/2018
Number of Days to Update: 34

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 07/11/2018
Date Made Active in Reports: 09/13/2018
Number of Days to Update: 64

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 04/12/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Quarterly

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing
In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/13/2019
Date Made Active in Reports: 04/29/2019
Number of Days to Update: 47

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System

The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 03/05/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 04/02/2019
Number of Days to Update: 28

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 06/04/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 04/09/2019
Date Data Arrived at EDR: 04/11/2019
Date Made Active in Reports: 05/08/2019
Number of Days to Update: 27

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 04/11/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)

Produced water ponds sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)
Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 01/07/2019
Date Data Arrived at EDR: 01/08/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 59

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/08/2019
Next Scheduled EDR Contact: 04/24/2047
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 01/07/2019
Date Data Arrived at EDR: 01/08/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 58

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 06/03/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 04/08/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/02/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 27

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 02/27/2019
Date Data Arrived at EDR: 02/28/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 32

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 02/14/2019
Date Data Arrived at EDR: 02/19/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 17

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 04/29/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 02/20/2019
Date Data Arrived at EDR: 05/01/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 29

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 04/25/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 02/27/2019
Date Data Arrived at EDR: 02/28/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 32

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 04/29/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 04/10/2019
Date Data Arrived at EDR: 04/11/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 19

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 03/29/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 12/11/2018
Date Data Arrived at EDR: 12/13/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 33

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/20/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 01/18/2019
Date Data Arrived at EDR: 01/23/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 41

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

KERN COUNTY:

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 01/28/2019
Date Data Arrived at EDR: 02/07/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 29

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 05/02/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 05/16/2019
Date Data Arrived at EDR: 05/17/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 13

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 02/08/2019
Date Data Arrived at EDR: 02/12/2019
Date Made Active in Reports: 03/12/2019
Number of Days to Update: 28

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/17/2019
Date Data Arrived at EDR: 01/18/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 46

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: N/A
Telephone: N/A
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 12/19/2018
Date Data Arrived at EDR: 01/10/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 56

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 05/02/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 01/14/2019
Date Data Arrived at EDR: 01/15/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 51

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/16/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 01/15/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 51

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Varies

LOS ANGELES AST: Active & Inactive AST Inventory
A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 54

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 04/05/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills

This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 04/30/2012
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 42

Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 04/17/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory

A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 54

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 04/05/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory

A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 54

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 04/05/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List

Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 01/30/2019
Date Data Arrived at EDR: 02/01/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 34

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/16/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank

Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Semi-Annually

UST LONG BEACH: City of Long Beach Underground Storage Tank

Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 03/10/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 54

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Annually

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 10/02/2018
Date Data Arrived at EDR: 10/05/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 28

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 02/20/2019
Date Data Arrived at EDR: 02/22/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 13

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 03/29/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/19/2019
Date Made Active in Reports: 05/08/2019
Number of Days to Update: 50

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 02/21/2019
Date Data Arrived at EDR: 02/26/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 34

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 05/23/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Varies

MONTEREY COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 02/05/2019
Date Data Arrived at EDR: 02/07/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 26

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 04/01/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 02/21/2019
Date Data Arrived at EDR: 02/22/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 14

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 05/20/2019
Date Data Arrived at EDR: 05/21/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 9

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 05/13/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/09/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 21

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/06/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/09/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 21

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/06/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 01/02/2019
Date Data Arrived at EDR: 02/05/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 31

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/07/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 02/28/2019
Date Data Arrived at EDR: 03/01/2019
Date Made Active in Reports: 04/12/2019
Number of Days to Update: 42

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 06/03/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 01/14/2019
Date Data Arrived at EDR: 01/18/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 46

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/12/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 18

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 01/29/2019
Date Data Arrived at EDR: 01/31/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 36

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 11/07/2018
Date Data Arrived at EDR: 01/04/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 60

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/02/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 11/07/2018
Date Data Arrived at EDR: 12/28/2018
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 67

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/02/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List

Cupa facility list

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/13/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 48

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 05/02/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 02/27/2019
Date Data Arrived at EDR: 02/28/2019
Date Made Active in Reports: 04/02/2019
Number of Days to Update: 33

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 05/06/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 03/04/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 04/02/2019
Number of Days to Update: 28

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 06/04/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities
San Diego County Solid Waste Facilities.

Date of Government Version: 04/18/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 56
Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing
A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 03/06/2019
Date Data Arrived at EDR: 03/06/2019
Date Made Active in Reports: 04/29/2019
Number of Days to Update: 54
Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

SAN DIEGO CO. SAM: Environmental Case Listing
The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24
Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 06/03/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

LUST SAN FRANCISCO: Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10
Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 05/02/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Quarterly

UST SAN FRANCISCO: Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/05/2018
Date Data Arrived at EDR: 11/06/2018
Date Made Active in Reports: 12/14/2018
Number of Days to Update: 38
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 05/02/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 02/13/2019
Date Data Arrived at EDR: 02/15/2019
Date Made Active in Reports: 03/14/2019
Number of Days to Update: 27

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 03/04/2019
Date Data Arrived at EDR: 03/13/2019
Date Made Active in Reports: 04/29/2019
Number of Days to Update: 47

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 02/13/2019
Date Data Arrived at EDR: 02/19/2019
Date Made Active in Reports: 03/06/2019
Number of Days to Update: 15

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13
Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Annually

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 01/30/2019
Date Data Arrived at EDR: 02/01/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 34
Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90
Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51
Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 03/05/2019
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 04/29/2019
Number of Days to Update: 53
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 06/03/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/05/2019
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 04/03/2019
Number of Days to Update: 27
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 06/03/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 03/18/2019
Date Data Arrived at EDR: 03/26/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 36

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 04/03/2019
Date Data Arrived at EDR: 04/11/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 19

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 04/08/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 12/11/2018
Date Data Arrived at EDR: 12/13/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 33

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 02/28/2019
Date Data Arrived at EDR: 03/01/2019
Date Made Active in Reports: 04/03/2019
Number of Days to Update: 33

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 06/03/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 12/13/2018
Date Data Arrived at EDR: 12/18/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 28

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 05/16/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 01/18/2019
Date Data Arrived at EDR: 01/23/2019
Date Made Active in Reports: 03/06/2019
Number of Days to Update: 42

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 12/26/2018
Date Data Arrived at EDR: 12/27/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 19

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 05/06/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 05/02/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 12/26/2018
Date Data Arrived at EDR: 01/24/2019
Date Made Active in Reports: 02/28/2019
Number of Days to Update: 35

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/23/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/29/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Annually

LUST VENTURA: Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/09/2019
Next Scheduled EDR Contact: 08/26/2019
Data Release Frequency: Quarterly

MED WASTE VENTURA: Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 03/26/2019
Date Data Arrived at EDR: 04/25/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 35
Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 04/23/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 02/26/2019
Date Data Arrived at EDR: 03/13/2019
Date Made Active in Reports: 04/03/2019
Number of Days to Update: 21
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 12/26/2018
Date Data Arrived at EDR: 01/03/2019
Date Made Active in Reports: 01/16/2019
Number of Days to Update: 13
Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 03/29/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 02/08/2019
Date Data Arrived at EDR: 02/12/2019
Date Made Active in Reports: 03/06/2019
Number of Days to Update: 22
Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 04/25/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 02/11/2019
Date Data Arrived at EDR: 02/12/2019
Date Made Active in Reports: 03/04/2019
Number of Days to Update: 20
Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/14/2019
Next Scheduled EDR Contact: 08/26/2019
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/10/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 01/30/2019
Date Made Active in Reports: 02/14/2019
Number of Days to Update: 15

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/01/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 10/23/2018
Date Made Active in Reports: 11/27/2018
Number of Days to Update: 35

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 02/23/2018
Date Made Active in Reports: 04/09/2018
Number of Days to Update: 45

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/17/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/15/2018
Date Made Active in Reports: 07/09/2018
Number of Days to Update: 24

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/11/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: PennWell Corporation
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

© 2015 TomTom North America, Inc. All rights reserved. This material is proprietary and the subject of copyright protection and other intellectual property rights owned by or licensed to Tele Atlas North America, Inc. The use of this material is subject to the terms of a license agreement. You will be held liable for any unauthorized copying or disclosure of this material.

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

BEDFORD MARKETPLACE - RCTCT PORTION
INTERSECTIONS OF EAGLE GLEN PARKWAY / CAJALCO ROAD
CORONA, CA 92881

TARGET PROPERTY COORDINATES

Latitude (North):	33.824287 - 33° 49' 27.43''
Longitude (West):	117.519598 - 117° 31' 10.55''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	451916.3
UTM Y (Meters):	3742601.0
Elevation:	884 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5636469 CORONA SOUTH, CA
Version Date:	2012
East Map:	5636475 LAKE MATHEWS, CA
Version Date:	2012

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

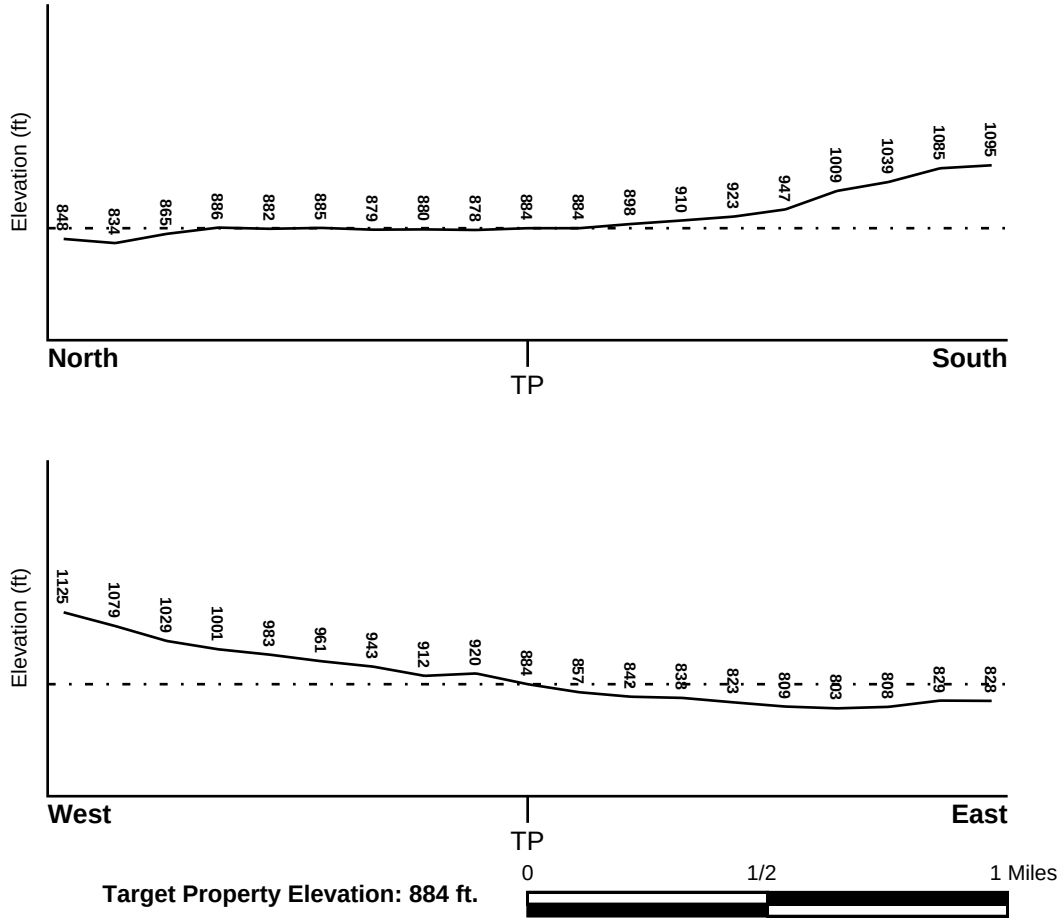
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General ENE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06065C1360G	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06065C1370G	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
NOT AVAILABLE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

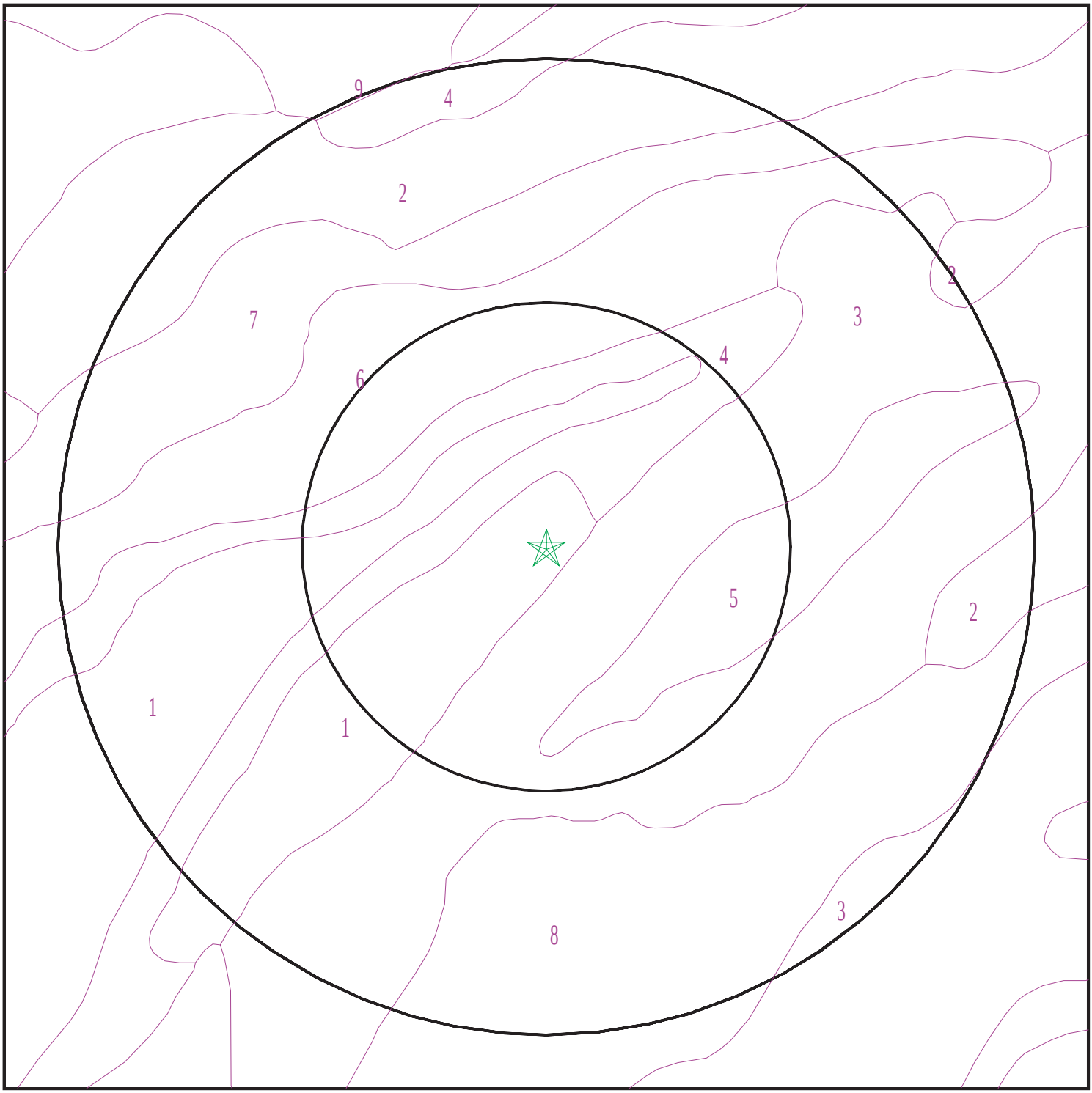
Era:	Mesozoic
System:	Lower Jurassic and Upper Triassic
Series:	Lower Mesozoic
Code:	lMze *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Eugeosynclinal Deposits

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 05678071.2r



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Bedford Marketplace - RCTCT Portion	CLIENT:	EBI Consulting
ADDRESS:	Intersections of Eagle Glen Parkway / Cajalco Road Corona CA 92881	CONTACT:	Kim Holland
LAT/LONG:	33.824287 / 117.519598	INQUIRY #:	05678071.2r
		DATE:	June 10, 2019 10:36 am

Copyright © 2019 EDR, Inc. © 2015 TomTom Rel. 2015.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: ARBUCKLE

Soil Surface Texture: loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	11 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 7.8 Min: 5.6
2	11 inches	25 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 7.8 Min: 5.6
3	25 inches	44 inches	gravelly loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 7.8 Min: 5.6

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
4	44 inches	68 inches	stratified sandy loam to very gravelly sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 7.8 Min: 5.6

Soil Map ID: 2

Soil Component Name: ARBUCKLE

Soil Surface Texture: gravelly loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	25 inches	gravelly loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 7.8 Min: 5.6
2	25 inches	44 inches	gravelly clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 7.8 Min: 5.6

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
3	44 inches	68 inches	stratified very gravelly sandy loam to very gravelly sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 7.8 Min: 5.6

Soil Map ID: 3

Soil Component Name: GARRETSON

Soil Surface Texture: gravelly very fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	gravelly very fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 7.8 Min: 6.1
2	9 inches	53 inches	gravelly loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 7.8 Min: 6.1

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
3	53 inches	72 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 7.8 Min: 6.1

Soil Map ID: 4

Soil Component Name: Terrace escarpments

Soil Surface Texture: gravelly very fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class:
Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

No Layer Information available.

Soil Map ID: 5

Soil Component Name: CORTINA

Soil Surface Texture: cobbly sandy loam

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Excessively drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	22 inches	cobbly sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Silty Gravel	Max: 141 Min: 42	Max: 8.4 Min: 5.6
2	22 inches	38 inches	stratified very cobbly loamy sand to very cobbly loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Silty Gravel	Max: 141 Min: 42	Max: 8.4 Min: 5.6
3	38 inches	59 inches	stratified very gravelly sand to very gravelly loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Silty Gravel	Max: 141 Min: 42	Max: 8.4 Min: 5.6

Soil Map ID: 6

Soil Component Name: GARRETSON

Soil Surface Texture: very fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	very fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 7.8 Min: 6.1
2	9 inches	59 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 7.8 Min: 6.1

Soil Map ID: 7

Soil Component Name: CORTINA

Soil Surface Texture: gravelly sandy loam

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	22 inches	gravelly sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Silty Gravel	Max: 141 Min: 42	Max: 8.4 Min: 5.6

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	22 inches	38 inches	stratified very gravelly loamy sand to very gravelly loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Silty Gravel	Max: 141 Min: 42	Max: 8.4 Min: 5.6
3	38 inches	59 inches	stratified very gravelly sand to very gravelly loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Silty Gravel	Max: 141 Min: 42	Max: 8.4 Min: 5.6

Soil Map ID: 8

Soil Component Name: CORTINA

Soil Surface Texture: cobbly loamy sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Excessively drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	22 inches	cobbly loamy sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Silty Gravel	Max: 141 Min: 42	Max: 8.4 Min: 5.6

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	22 inches	38 inches	stratified very cobbly loamy sand to very cobbly loam	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Silty Gravel	Max: 141 Min: 42	Max: 8.4 Min: 5.6
3	38 inches	59 inches	stratified very gravelly sand to very gravelly loamy sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Silty Gravel	Max: 141 Min: 42	Max: 8.4 Min: 5.6

Soil Map ID: 9

Soil Component Name: VALLECITOS

Soil Surface Texture: loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 127 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 4 Min: 1.4	Max: Min:

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	7 inches	27 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 4 Min: 1.4	Max: Min:
3	27 inches	38 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 4 Min: 1.4	Max: Min:
4	38 inches	51 inches	unweathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 4 Min: 1.4	Max: Min:

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
4	USGS40000138455	1/2 - 1 Mile East

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

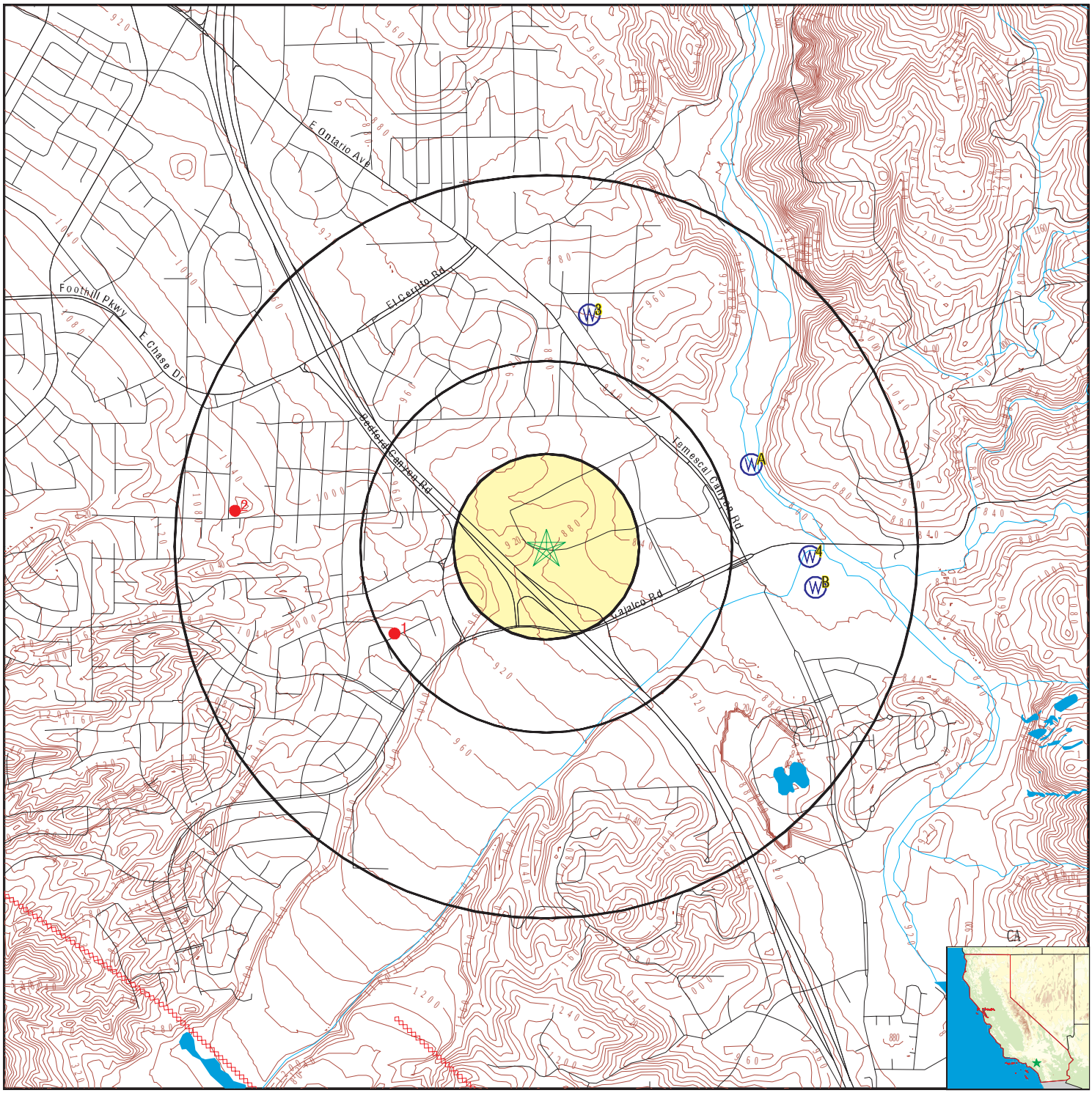
MAP ID	WELL ID	LOCATION FROM TP
A1	CADWR8000005736	1/2 - 1 Mile ENE
A2	CADWR8000005740	1/2 - 1 Mile ENE
3	4896	1/2 - 1 Mile North
B5	CADWR8000005707	1/2 - 1 Mile East
B6	CADWR8000005708	1/2 - 1 Mile East

OTHER STATE DATABASE INFORMATION

STATE OIL/GAS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	CAOG13000006404	1/4 - 1/2 Mile WSW
2	CAOG13000006359	1/2 - 1 Mile West

PHYSICAL SETTING SOURCE MAP - 05678071.2r



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	Bedford Marketplace - RCTCT Portion	CLIENT:	EBI Consulting
ADDRESS:	Intersections of Eagle Glen Parkway / Cajalco Road Corona CA 92881	CONTACT:	Kim Holland
LAT/LONG:	33.824287 / 117.519598	INQUIRY #:	05678071.2r
		DATE:	June 10, 2019 10:36 am

Copyright © 2019 EDR, Inc. © 2015 TomTom Rel. 2015.

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A1
ENE
1/2 - 1 Mile
Lower

CA WELLS **CADWR8000005736**

State Well #:	04S06W16C002S	Station ID:	46733
Well Name:	Flagler 3A Well	Well Use:	Observation
Well Type:	Single Well	Well Depth:	0
Basin Name:	Bedford-Coldwater	Well Completion Rpt #:	Not Reported

---

A2
ENE
1/2 - 1 Mile
Lower

CA WELLS **CADWR8000005740**

State Well #:	04S06W16C003S	Station ID:	46732
Well Name:	Flagler 2A Well	Well Use:	Observation
Well Type:	Single Well	Well Depth:	0
Basin Name:	Bedford-Coldwater	Well Completion Rpt #:	Not Reported

---

3
North
1/2 - 1 Mile
Lower

CA WELLS **4896**

Seq:	4896	Prim sta c:	04S/06W-16C01 S
Frds no:	3310037004	County:	33
District:	14	User id:	WAT
System no:	3310037	Water type:	G
Source nam:	WELL 04	Station ty:	WELL/AMBNT/MUN/INTAKE
Latitude:	335000.0	Longitude:	1173100.0
Precision:	4	Status:	AR
Comment 1:	Not Reported	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		

System no:	3310037	System nam:	Corona, City of
Hqname:	Not Reported	Address:	P.O. Box 940
City:	Corona	State:	CA
Zip:	91718	Zip ext:	Not Reported
Pop serv:	104000	Connection:	25321
Area serve:	CORONA AND VICINITY		

4
East
1/2 - 1 Mile
Lower

FED USGS **USGS40000138455**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	004S006W16C001S	Type:	Well
Description:	Not Reported	HUC:	18070203
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported

Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	99
Well Depth Units:	ft	Well Hole Depth:	99
Well Hole Depth Units:	ft		

B5
East
1/2 - 1 Mile
Lower

CA WELLS **CADWR8000005707**

State Well #:	Not Reported	Station ID:	46730
Well Name:	Non-Potable Well #2	Well Use:	Irrigation
Well Type:	Single Well	Well Depth:	0
Basin Name:	Bedford-Coldwater	Well Completion Rpt #:	Not Reported

---

B6
East
1/2 - 1 Mile
Lower

CA WELLS **CADWR8000005708**

State Well #:	Not Reported	Station ID:	46729
Well Name:	Non-Potable Well #1	Well Use:	Irrigation
Well Type:	Single Well	Well Depth:	0
Basin Name:	Bedford-Coldwater	Well Completion Rpt #:	Not Reported

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database EDR ID Number

1
WSW **OIL_GAS** **CAOG13000006404**
1/4 - 1/2 Mile

API #:	0406500129	Well #:	1
Well Status:	Plugged	Well Type:	DH
Operator Name:	Kenneth E. Reed	Lease Name:	Kincheloe
Field Name:	Any Field	Area Name:	Any Area
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

2
West **OIL_GAS** **CAOG13000006359**
1/2 - 1 Mile

API #:	0406500081	Well #:	1
Well Status:	Idle	Well Type:	OG
Operator Name:	A. W. Duncan	Lease Name:	Lease by A. W. Duncan
Field Name:	Any Field	Area Name:	Any Area
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
92881	5	0

Federal EPA Radon Zone for RIVERSIDE County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for RIVERSIDE COUNTY, CA

Number of sites tested: 12

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.117 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.450 pCi/L	100%	0%	0%
Basement	1.700 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

© 2015 TomTom North America, Inc. All rights reserved. This material is proprietary and the subject of copyright protection and other intellectual property rights owned by or licensed to Tele Atlas North America, Inc. The use of this material is subject to the terms of a license agreement. You will be held liable for any unauthorized copying or disclosure of this material.

This Report contains certain products owned by or licensed by Tele Atlas North America, Inc. ("TANA") and licensed to EDR pursuant to an agreement between EDR and TANA (the "TANA Agreement"). Such products include the Dynamap® /2000 (commencing with the most current version, nationwide coverage, ArcInfo™ format, tiled by county, with semi−annual Updates) and are referred to in this Report as the "Licensed Products".

The use of the Licensed Products with a non−TANA map may result in increased variance between the location displayed on the map and ground truth location.

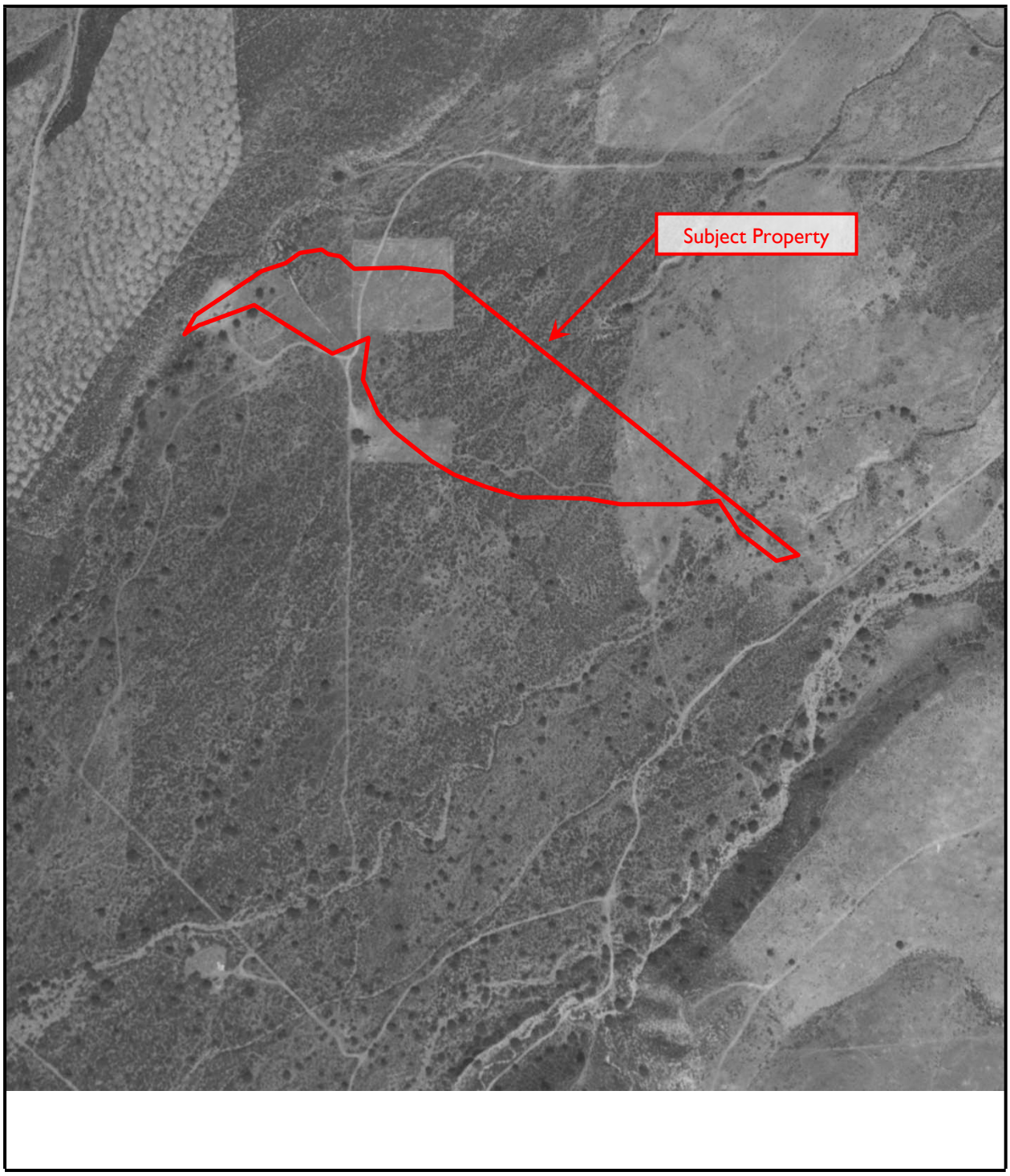
The recipient of the Report (hereinafter referred to as an "End User") shall use such Report solely for its internal purposes and not for resale.

U.S. GOVERNMENT RIGHTS. If End User is an agency, department, or other entity of the United States Government, or funded in whole or in part by the United States Government, then use, duplication, reproduction, release, modification, disclosure or transfer of this commercial product and accompanying documentation, is restricted in accordance with the LIMITED or RESTRICTED rights as described in DFARS 252.227−7014(a)(1) (JUN 1995) (DOD commercial computer software definition), DFARS 227.7202−1 (DOD policy on commercial computer software), FAR 52.227−19 (JUN 1987) (commercial computer software clause for civilian agencies), DFARS 252.227−7015 (NOV 1995) (DOD technical data − commercial items clause); FAR 52.227−14 Alternates I, II, and III (JUN 1987) (civilian agency technical data and noncommercial computer software clause); and/or FAR 12.211 and FAR 12.212 (commercial item acquisitions), as applicable. In case of conflict between any of the FAR and DFARS provisions listed herein, the construction that provides greater limitations on the Government's rights shall control. Contractor/manufacturer is Tele Atlas North America, Inc., 11 Lafayette Street, Lebanon, NH 03766−1445. Phone: 603.643. 0330. The Licensed Products are ©1984−2008 by Tele Atlas North America, Inc. ALL RIGHTS RESERVED. For purpose of any public disclosure provision under any federal, state or local law, it is agreed that the Licensed Products are a trade secret and a proprietary commercial product and not subject to disclosure.

If End User is an agency, department, or other entity of any State government, the United States Government or any other public entity or funded in whole or in part by the United States Government, such End User agrees to protect the Licensed Products from public disclosure and to consider the Licensed Products exempt from any statute, law, regulation, or code, including any Sunshine Act, Public Records Act, Freedom of Information Act, or equivalent, which permits public access and/or reproduction or use of the Licensed Products. In the event that such exemption is challenged under any such laws, any and all right to retain any copies or to use of the Licensed Products shall be terminated and considered immediately null and void. Any copies of the Licensed Products held by End User shall immediately be destroyed. If any court of competent jurisdiction considers this clause void and unenforceable, in whole or in part, for any reason, then all Licensed Products previously delivered to End User will be destroyed.

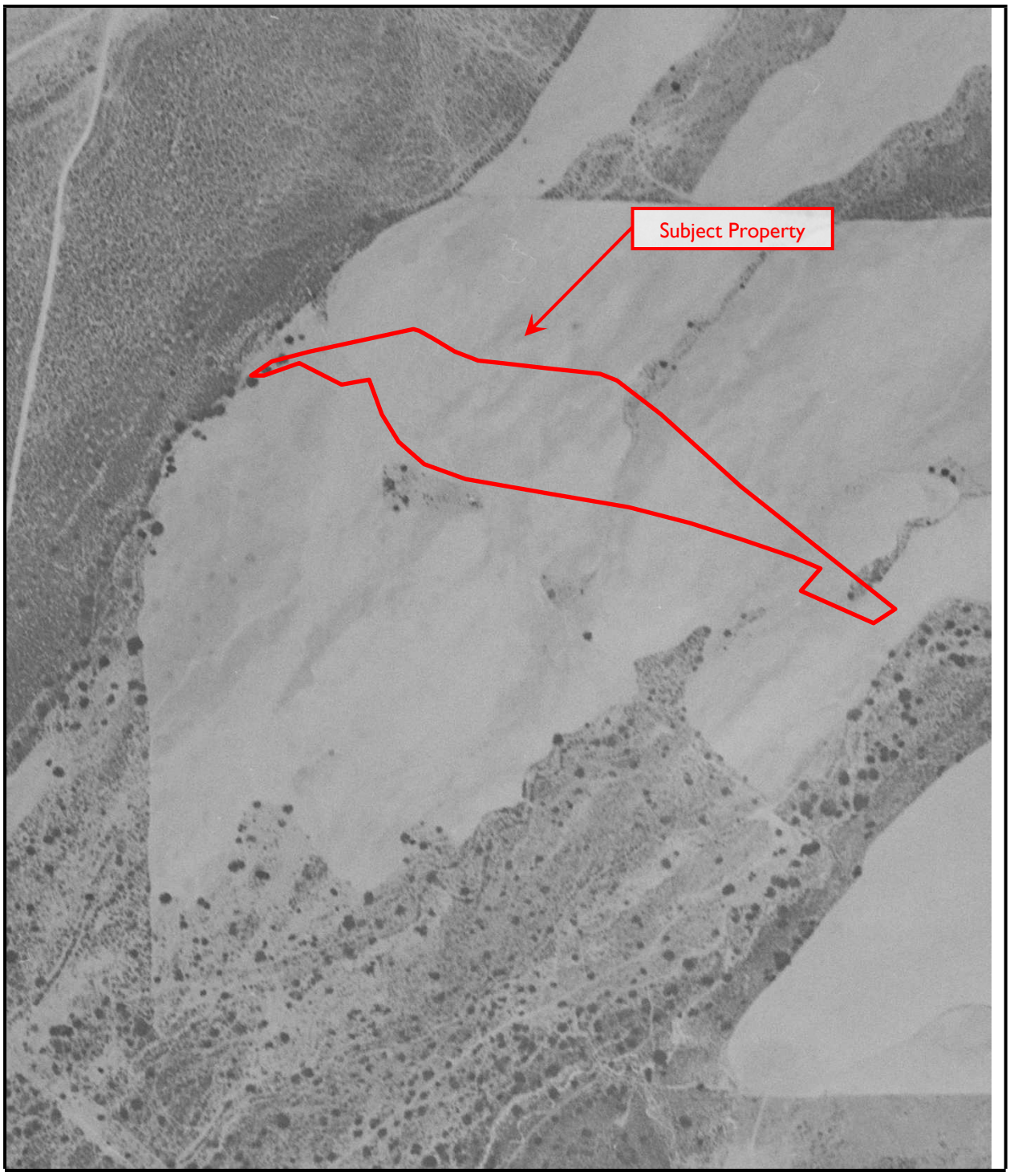
APPENDIX F

HISTORICAL DOCUMENTATION



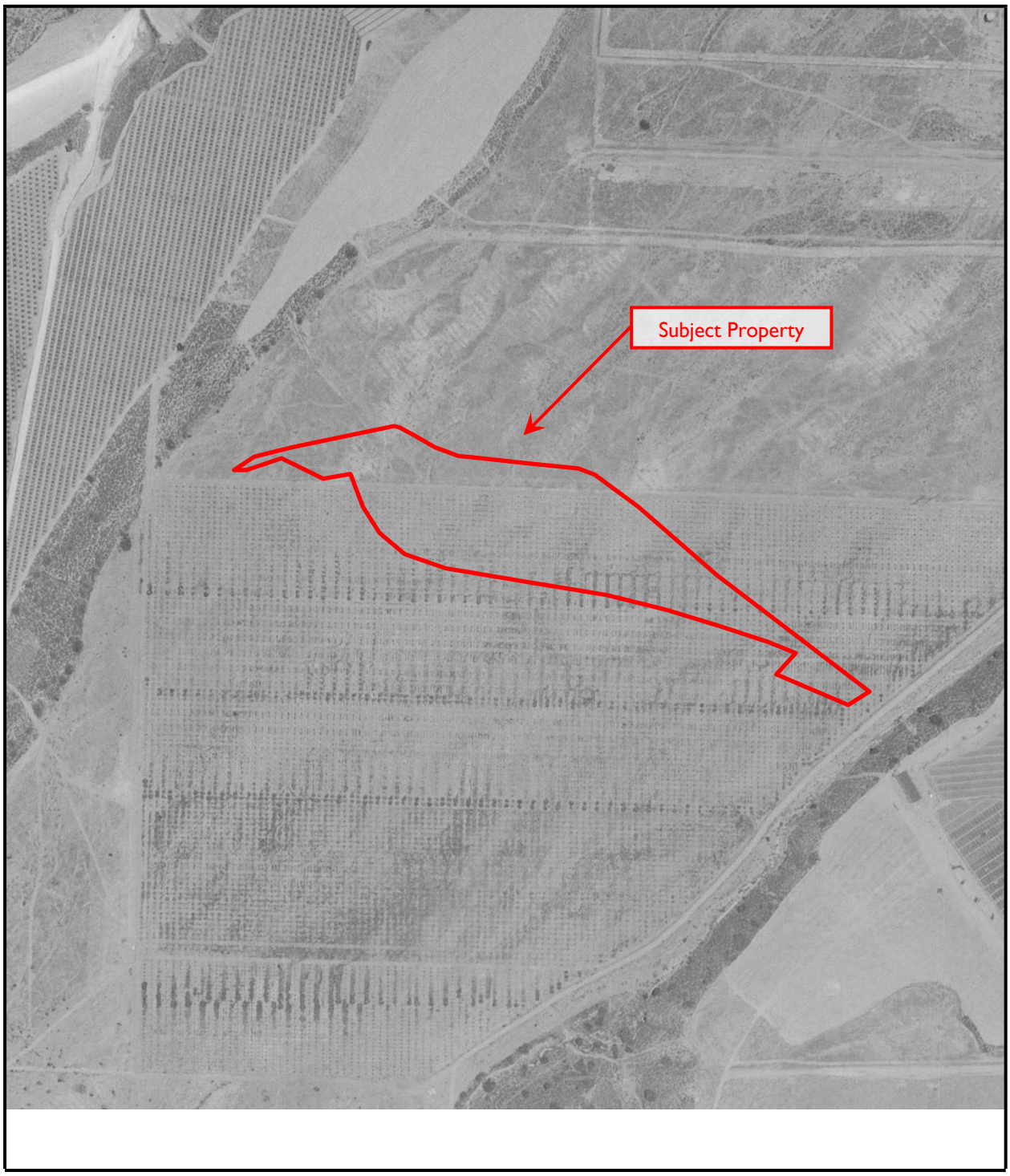
Aerial Photograph

Year: 1931



Aerial Photograph

Year: 1948



Aerial Photograph

Year: 1961



Aerial Photograph

Year: 1975



Aerial Photograph

Year: 1990



Aerial Photograph

Year: 2006



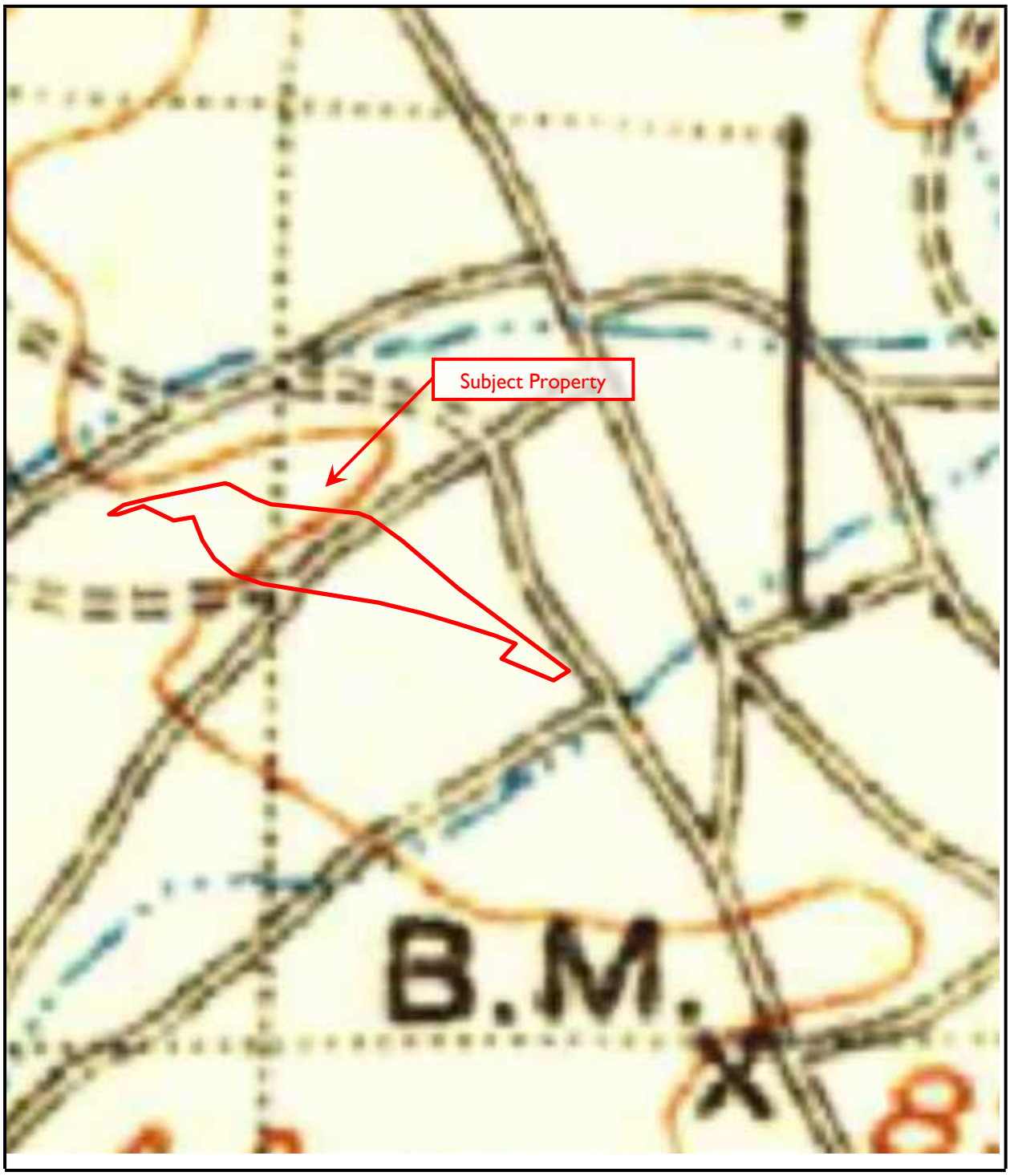
Aerial Photograph

Year: 2012



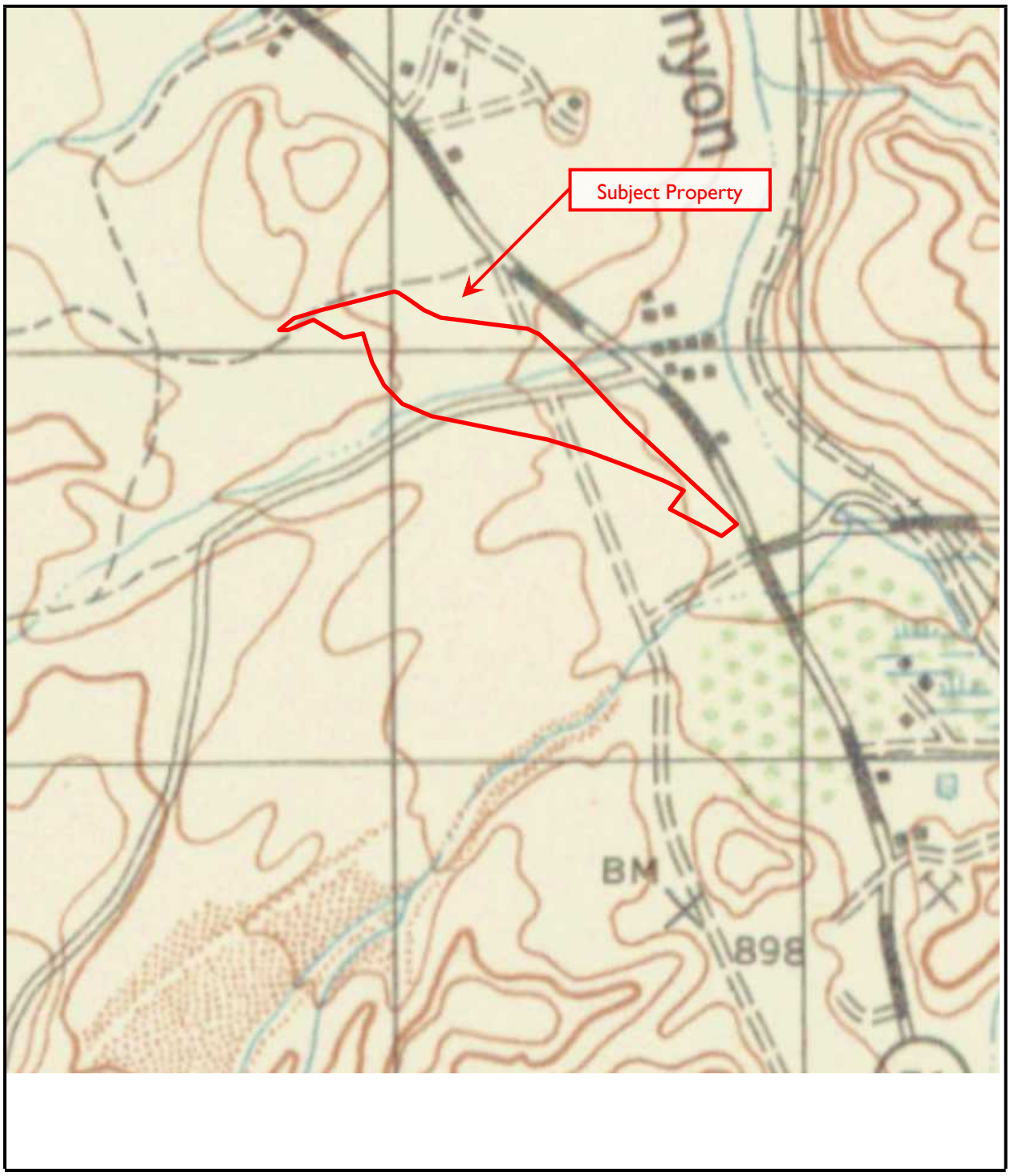
Aerial Photograph

Year: 2016



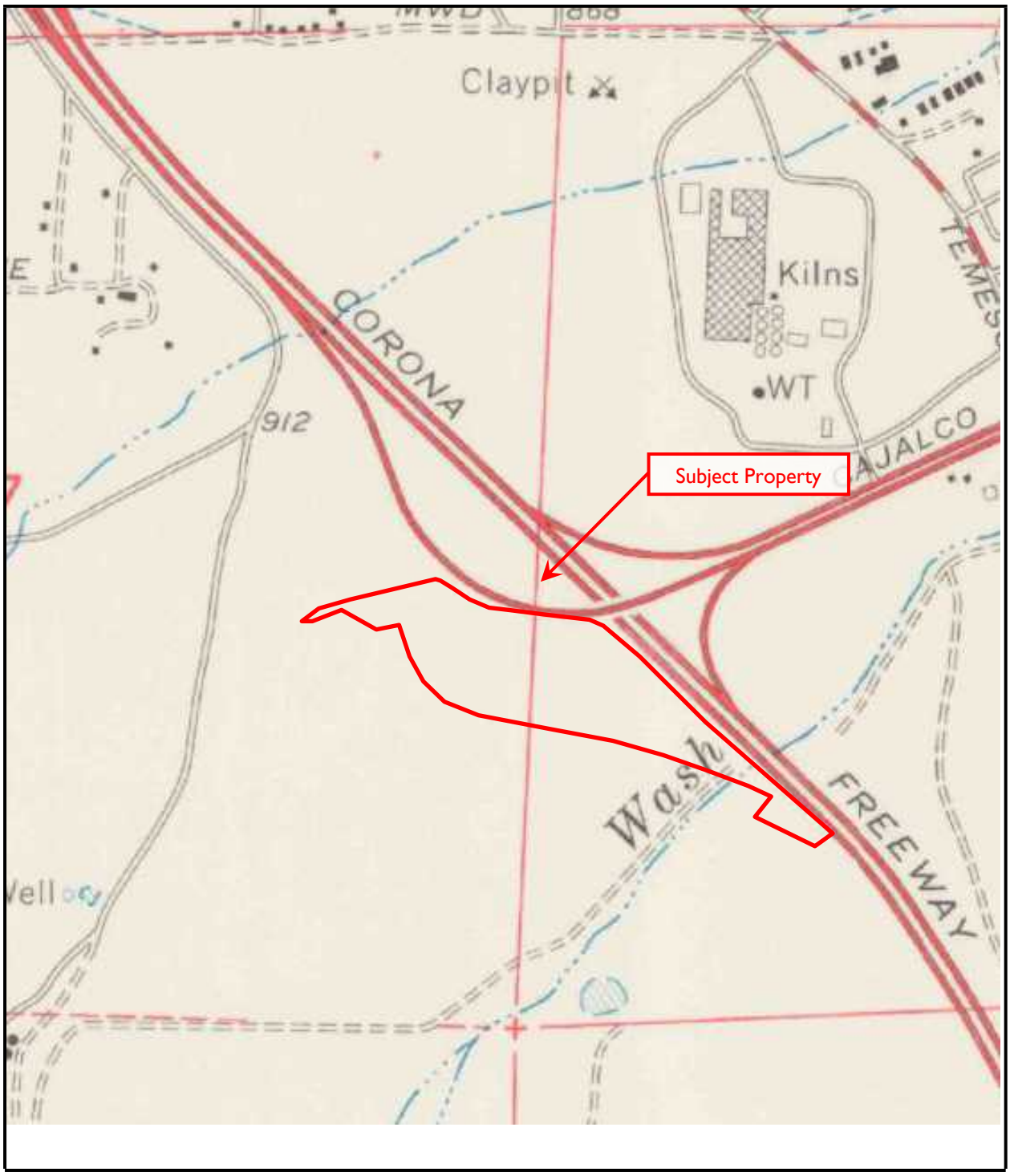
USGS Topographic Map

Year: 1901



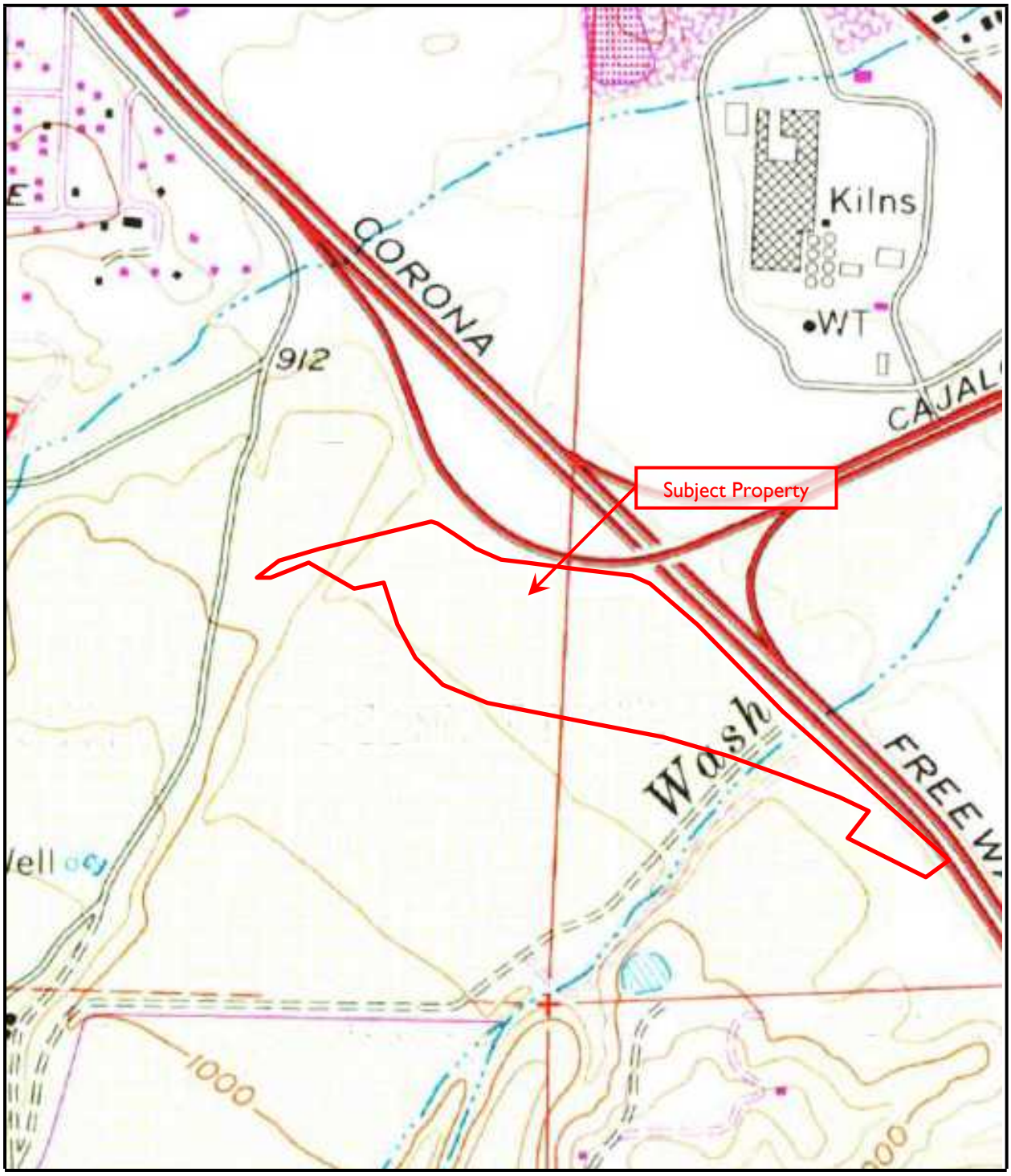
USGS Topographic Map

Year: 1947



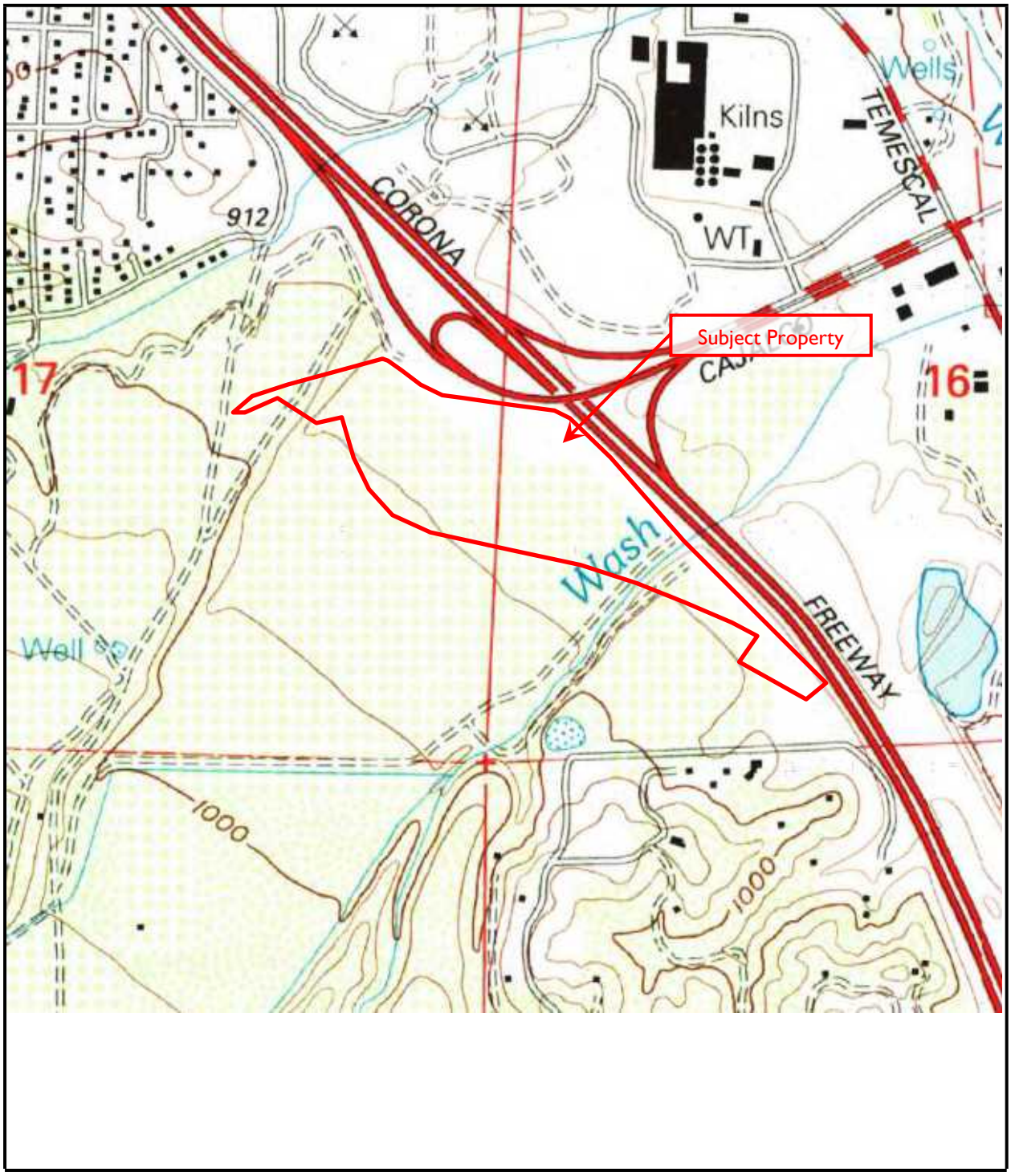
USGS Topographic Map

Year: 1967



USGS Topographic Map

Year: 1982



USGS Topographic Map

Year: 1997

Bedford Marketplace - RCTCT Portion

Intersections of Eagle Glen Parkway / Cajalco Road

Corona, CA 92881

Inquiry Number: 5678071.3

June 10, 2019

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

06/10/19

Site Name:

Bedford Marketplace - RCTCT
Intersections of Eagle Glen Par
Corona, CA 92881
EDR Inquiry # 5678071.3

Client Name:

EBI Consulting
21 B Street
Burlington, MA 01803
Contact: Kim Holland

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by EBI Consulting were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # A98B-4413-ABD2

PO # NA

Project 1119003601

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: A98B-4413-ABD2

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

Limited Permission To Make Copies

EBI Consulting (the client) is permitted to make up to FIVE photocopies of this Sanborn Map transmittal and each fire insurance map accompanying this report solely for the limited use of its customer. No one other than the client is authorized to make copies. Upon request made directly to an EDR Account Executive, the client may be permitted to make a limited number of additional photocopies. This permission is conditioned upon compliance by the client, its customer and their agents with EDR's copyright policy; a copy of which is available upon request.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT. Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2019 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

Bedford Marketplace - RCTCT Portion
Intersections of Eagle Glen Parkway / Cajalco Road
Corona, CA 92881

Inquiry Number: 5678071.5
June 10, 2019

The EDR-City Directory Abstract

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Executive Summary

Findings

City Directory Images

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OR DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction orforecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2017 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc. or its affiliates is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Abstract is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Abstract includes a search and abstract of available city directory data. For each address, the directory lists the name of the corresponding occupant at five year intervals.

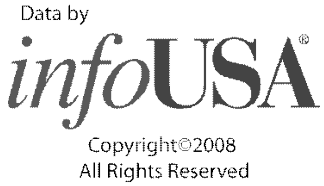
Business directories including city, cross reference and telephone directories were reviewed, if available, at approximately five year intervals for the years spanning 1921 through 2014. This report compiles information gathered in this review by geocoding the latitude and longitude of properties identified and gathering information about properties within 660 feet of the target property.

A summary of the information obtained is provided in the text of this report.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

EDR is licensed to reproduce certain City Directory works by the copyright holders of those works. The purchaser of this EDR City Directory Report may include it in report(s) delivered to a customer. Reproduction of City Directories without permission of the publisher or licensed vendor may be a violation of copyright.



RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

Year	Source	TP	Adjoining	Text Abstract	Source Image
2014	EDR Digital Archive	-	X	X	-
2010	EDR Digital Archive	-	X	X	-
2005	EDR Digital Archive	-	X	X	-
2002	SBC PACIFIC BELL	-	-	-	-
2001	Haines Company, Inc.	-	-	-	-
1996	Pacific Bell	-	-	-	-
1993	Pacific Bell	-	-	-	-
1990	Pacific Bell	-	-	-	-
1986	Pacific Bell Yellow Pages	-	-	-	-
1981	Pacific Telephone	-	-	-	-
1977	Pacific Telephone	-	-	-	-
1970	Pacific Telephone	-	-	-	-

EXECUTIVE SUMMARY

Year	Source	TP	Adjoining	Text Abstract	Source Image
1967	Luskey Brothers & Co.	-	-	-	-
1966	Luskey Brothers & Company Inc.	-	-	-	-
1961	Luskey Brothers & Co.	-	-	-	-
1960	Luskeys Brothers & Co., Publishers	-	-	-	-
1956	Luskey Brothers & Co.	-	-	-	-
1955	Luskeys Brothers Co., Publishers	-	-	-	-
1951	Los Angeles Directory Co.	-	-	-	-
1946	Southern California Telephone Company	-	-	-	-
1945	Los Angeles Directory Co.	-	-	-	-
1941	Pacific Directory Co.	-	-	-	-
1939	Los Angeles Directory Co.	-	-	-	-
1936	Los Angeles Directory Co.	-	-	-	-
1931	Southern California Telephone Co.	-	-	-	-
1930	Los Angeles Directory Co.	-	-	-	-
1927	Los Angeles Directory Co.	-	-	-	-
1925	Los Angeles Directory Co.	-	-	-	-
1924	Kaasen Directory Co.	-	-	-	-
1921	Riverside Directory Co.	-	-	-	-

FINDINGS

TARGET PROPERTY INFORMATION

ADDRESS

Intersections of Eagle Glen Parkway / Cajalco Road
Corona, CA 92881

FINDINGS DETAIL

Target Property research detail.

FINDINGS

ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

Tuscany St

2430 Tuscany St

Year	Uses	Source
2014	BEST BUY CO INC	EDR Digital Archive
2010	BEST BUY CO INC	EDR Digital Archive
2005	BEST BUY CO INC	EDR Digital Archive

2437 Tuscany St

Year	Uses	Source
2014	TSA STORES INC	EDR Digital Archive
	SPORT MART STORE 655	EDR Digital Archive
2010	SPORT MART STORE 655	EDR Digital Archive
	SPORTS AUTHORITY INC	EDR Digital Archive
2005	SPORTMART STORE 655	EDR Digital Archive

2459 Tuscany St

Year	Uses	Source
2014	MARMAXX OPERATING CORP	EDR Digital Archive
	MARSHALLS OF MA INC	EDR Digital Archive
2010	MARMAXX OPERATING CORP	EDR Digital Archive
2005	MARSHALLS OF CA LLC	EDR Digital Archive

2470 Tuscany St

Year	Uses	Source
2014	HAPPY NAILS & SPA OF CORONA	EDR Digital Archive
	CASTLE & COOKE CORONA INC	EDR Digital Archive
	BARNES & NOBLE BOOKSELLERS INC	EDR Digital Archive
2010	BARNES & NOBLE BOOKSELLERS INC	EDR Digital Archive
	HAPPY NAILS & SPA OF CORONA	EDR Digital Archive
	DDRD CORP	EDR Digital Archive
	CASTLE & COOKE CORONA INC	EDR Digital Archive
2005	HAPPY NAILS & SPA OF CORONA	EDR Digital Archive

FINDINGS

2489 Tuscany St

Year	Uses	Source
2014	KOHLS DEPARTMENT STORES INC	EDR Digital Archive

2519 Tuscany St

Year	Uses	Source
2014	ROSS STORES INC	EDR Digital Archive
2010	ROSS STORES INC	EDR Digital Archive
2005	ROSS STORES INC	EDR Digital Archive

FINDINGS

ADJOINING PROPERTY: ADDRESSES NOT IDENTIFIED IN RESEARCH SOURCE

The following Adjoining Property addresses were researched for this report, and the addresses were not identified in research source.

Address Researched	Address Not Identified in Research Source
2430 Tuscany St	2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2437 Tuscany St	2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2459 Tuscany St	2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2470 Tuscany St	2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2489 Tuscany St	2010, 2005, 2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921
2519 Tuscany St	2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921

TARGET PROPERTY: ADDRESS NOT IDENTIFIED IN RESEARCH SOURCE

The following Target Property addresses were researched for this report, and the addresses were not identified in the research source.

Address Researched	Address Not Identified in Research Source
Intersections of Eagle Glen Parkway / Cajalco Road	2014, 2010, 2005, 2002, 2001, 1996, 1993, 1990, 1986, 1981, 1977, 1970, 1967, 1966, 1961, 1960, 1956, 1955, 1951, 1946, 1945, 1941, 1939, 1936, 1931, 1930, 1927, 1925, 1924, 1921

APPENDIX G

TERMINOLOGY

TERMINOLOGY

The following provides definitions and descriptions of certain terms that may be used in this report. Italics indicate terms that are defined by ASTM Standard Practice E 1527-13. The Standard Practice should be referenced for further detail related definitions or additional explanation regarding the meaning of terms.

Recognized environmental condition (REC): The presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: 1) due to any release to the environment, 2) under conditions indicative of a release to the environment; or 3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not recognized environmental conditions.

De minimis conditions: Conditions that generally do not present threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be de minimis are not recognized environmental conditions or controlled recognized conditions.

Historical recognized environmental condition(s) (HREC): A past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted residential use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls). Before calling the past release a historical recognized environmental condition, the environmental professional must determine whether the past release is a recognized environmental condition at the time of the Phase I Environmental Site Assessment is conducted (for example, if there has been a change in the regulatory criteria). If the EP considers the past release to be a recognized environmental condition at the time of the Phase I ESA, the condition shall be included in the conclusions section of the report as a recognized environmental condition,

Controlled recognized environmental condition(s) (CREC): A recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by the regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls). A condition considered by the environmental professional to be a controlled recognized condition shall be listed in the findings section of the Phase I Environmental Site Assessment report, and as a recognized environmental condition in the conclusions section of the Phase I Environmental Site Assessment report. NOTE: A condition identified as a controlled recognized environmental condition does not imply that the environmental professional has evaluated or confirmed the adequacy, implementation, or continued effectiveness of the required control that has been, or is intended to be, implemented.

Material threat: A physically observable or obvious threat which is reasonably likely to lead to a release that, in the opinion of the environmental professional, is threatening and might result in impact to public health or the environment. An example might include an aboveground storage tank that contains a hazardous substance and which shows evidence of damage such that it may cause or contribute to tank integrity failure with a release of contents to the environment.

Material impact to public health or environment: A substantial risk of harm to public health or the environment resulting from the presence or likely presence of an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water, or surface water of the property. An example might include a release of a hazardous substance in concentrations exceeding applicable governmental agency standards under conditions that could reasonably and foreseeably result in substantial exposure to humans or

substantial damage to natural resources. The risk of that exposure or damage would represent a material impact to public health or environment.

General risk of enforcement action: The likelihood that an environmental condition would be subject to enforcement action if brought to the attention of appropriate governmental agencies. If the circumstances suggest an enforcement action would be more likely than not, then the condition is considered a general risk of enforcement action.

Data failure: A failure to achieve the historical research objectives, even after reviewing the standard historical sources that are reasonably ascertainable and likely to be useful. Data failure is one type of data gap.

Data gap: A lack of or inability to obtain information required by this practice despite good faith efforts by the environmental professional to gather such information. Data gaps may result from incompleteness in any of the activities required by this practice, including, but not limited to site reconnaissance (for example, an inability to conduct the site visit), and interviews (for example, an inability to interview the key site manager, regulatory officials, etc.).

APPENDIX G-1:

Preliminary Water Quality Management Plan

This Page Intentionally Left Blank

Preliminary
Water Quality Management Plan
Bedford Commercial Site ~ TTM 37788

Prepared for

Guardian Capital






January 2020

Hunsaker & Associates

Preliminary
Water Quality Management Plan
Bedford Commercial Site ~ TTM 37788

January 2020

Hunsaker & Associates

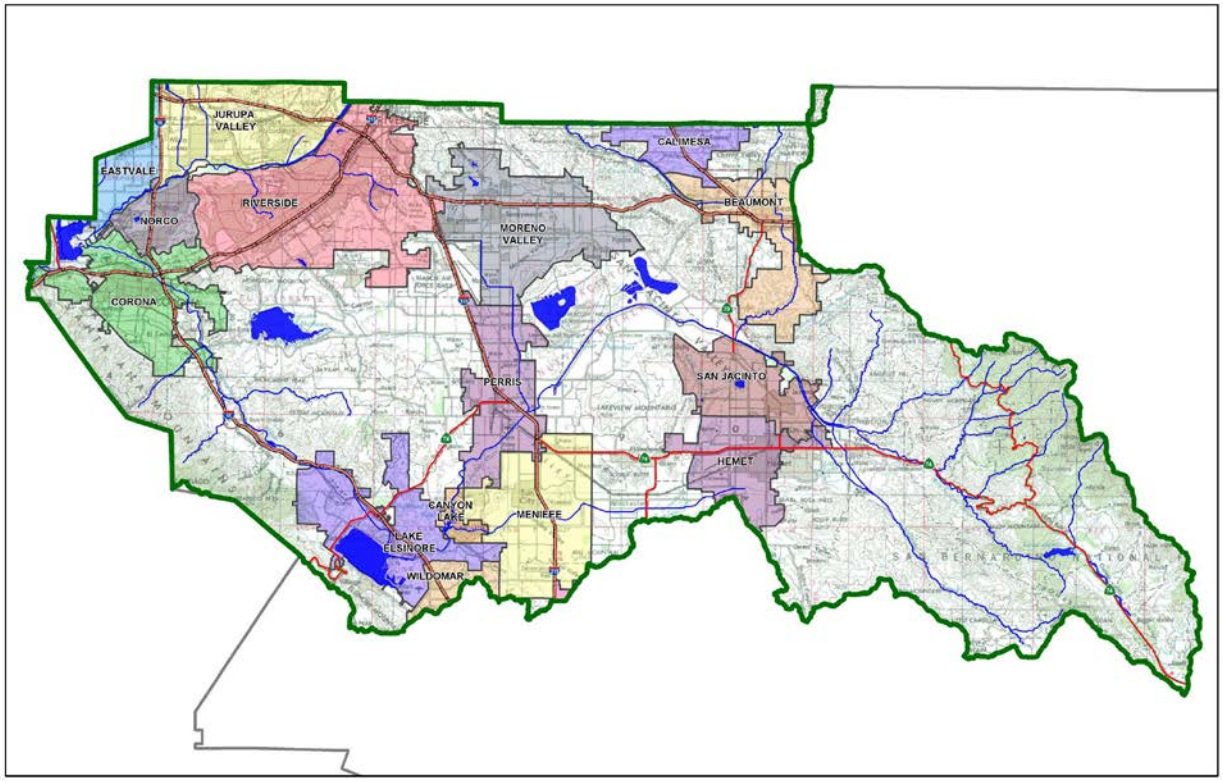
Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: Bedford Commercial Site

Development No: __TPM 37788_____

Design Review/Case No: ___Design Review #2_____



☒ **Preliminary**
☐ **Final**

Original Date Prepared: July 19, 2019

Revision Date(s): January 8, 2020

Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**
Template revised June 30, 2016

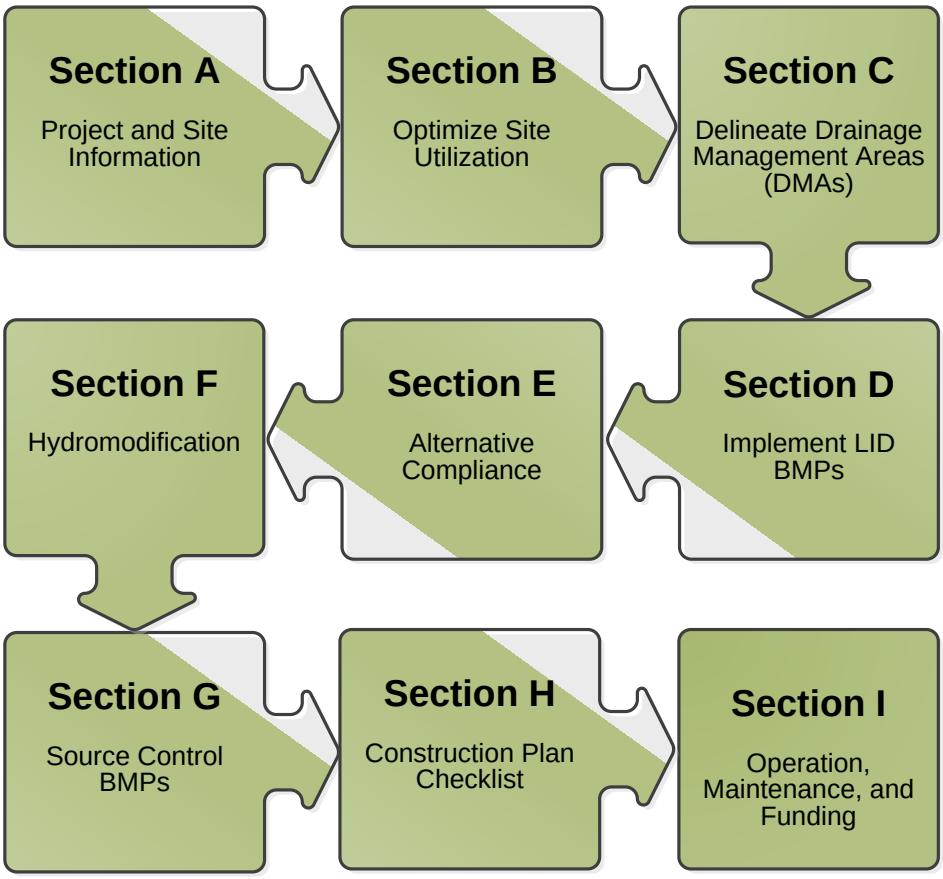
Contact Information:

Prepared for:
GUARDIAN CAPITAL
5780 Fleet Street, Suite 225
Carlsbad, CA 92008
(760) 780-7167

Prepared by:
Hunsaker & Associates Irvine, Inc.
2900 Adams Street; Ste A-15
Riverside, CA 92504
(951) 352-7200

A Brief Introduction

This Project-Specific WQMP Template for the **Santa Ana Region** has been prepared to help guide you in documenting compliance for your project. Because this document has been designed to specifically document compliance, you will need to utilize the WQMP Guidance Document as your "how-to" manual to help guide you through this process. Both the Template and Guidance Document go hand-in-hand, and will help facilitate a well prepared Project-Specific WQMP. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for **Bedford Marketplace, LLC,** by **Hunsaker & Associates Irvine, Inc.,** for the **Bedford Marketplace** project.

This WQMP is intended to comply with the requirements of **The City of Corona** which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP.

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Representative — Owner's Signature

1-30-2020 — Date

Owner's Printed Name

SVP, Owner's Rep. — Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."

Preparer's Signature

January 8, 2020 — Date

Brian Lowell, PE — Preparer's Printed Name

Engineer — Preparer's Title/Position

Preparer's Licensure:



Table of Contents

Section A: Project and Site Information 6
A.1 Maps and Site Plans 7
A.2 Identify Receiving Waters 8
A.3 Additional Permits/Approvals required for the Project: 8
Section B: Optimize Site Utilization (LID Principles) 9
Section C: Delineate Drainage Management Areas (DMAs) 11
Section D: Implement LID BMPs 13
D.1 Infiltration Applicability 13
D.2 Harvest and Use Assessment 14
D.3 Bioretention and Biotreatment Assessment 16
D.4 Feasibility Assessment Summaries 17
D.5 LID BMP Sizing 18
Section E: Alternative Compliance (LID Waiver Program) 19
E.1 Identify Pollutants of Concern 20
E.2 Stormwater Credits 21
E.3 Sizing Criteria 21
E.4 Treatment Control BMP Selection 22
Section F: Hydromodification 23
F.1 Hydrologic Conditions of Concern (HCOC) Analysis 23
F.2 HCOC Mitigation 24
Section G: Source Control BMPs 25
Section H: Construction Plan Checklist 27
Section I: Operation, Maintenance and Funding 28

List of Tables

Table A.1 Identification of Receiving Waters 8
Table A.2 Other Applicable Permits 8
Table C.1 DMA Classifications 11
Table C.2 Type 'A', Self-Treating Areas 11
Table C.3 Type 'B', Self-Retaining Areas 11
Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas 12
Table C.5 Type 'D', Areas Draining to BMPs 12
Table D.1 Infiltration Feasibility 13
Table D.2 LID Prioritization Summary Matrix 17
Table D.3 DCV Calculations for LID BMPs 18
Table E.1 Potential Pollutants by Land Use Type 20
Table E.2 Water Quality Credits 21
Table E.3 Treatment Control BMP Sizing 21
Table E.4 Treatment Control BMP Selection 22
Table F.1 Hydrologic Conditions of Concern Summary 23
Table G.1 Permanent and Operational Source Control Measures 25
Table H.1 Construction Plan Cross-reference 27

List of Appendices

Appendix 1: Maps and Site Plans 29
Appendix 2: Construction Plans 30
Appendix 3: Soils Information 31
Appendix 4: Historical Site Conditions 32
Appendix 5: LID Infeasibility 33
Appendix 6: BMP Design Details 34
Appendix 7: Hydromodification 35
Appendix 8: Source Control 36
Appendix 9: O&M 37
Appendix 10: Educational Materials ..... - 6 -

Section A: Project and Site Information

Guardian Capital proposes the development of the Bedford Commercial Center, Phase 2 of 3 of underlying TTM 36294, located just southeast of the intersection of Eagle Glen Parkway and Bedford Canyon Road, in the City of Corona, California. Specifically, the project location is bound to the north by Eagle Glen Parkway and residential homes beyond; to the east by Interstate 15; to the south by vacant land; and to the west by Phase 1 and 2.

The Bedford Commercial site consists of three distinct drainage management areas, DMA 'A', 'B' and 'C' and are described as follows:

- DMA 'A' is comprised of Lot 8 of Tract 36294 (10.03 acres), and will convey flows to an existing infiltration basin located northeast of the intersection of Hudson House Drive and Bedford Canyon Road. DMA 'A' not a part of this WQMP and is included within the approved overall WQMP for Tract 37030. Information contained within this WQMP pertaining to Lot 8 is informational only and in intended to provide a complete hydraulic and water quality picture. Please refer to the approved WQMP for Tract 36294 for additional information. Furthermore, the existing infiltration basin, 'Basin 1,' is not a part of this WQMP, and is shown for reference only.
  - The drainage boundary for DMA 'A' is intended to follow the property line for Lot 8 of Tract Map 36294. However, the nature of proposed development and the addition of DMA 'B' and 'C' to the project, ensuring that only Lot 8 is tributary to the existing basin is proving to be impractical. In order to conform with the intent of the original WQMP for Tract 36294, this WQMP will allow the shape of DMA 'A' to vary so long as the total area is to remain 10.03 acres. This will ensure that the existing facilities are not overloaded and that water quality objectives are met. The final drainage boundary for the 10.03 acre DMA 'A' will be determined during final engineering and will be presented in the Final WQMP for PM 37788.

- DMA 'B' comprises the majority of TPM 37788, and will convey flows to a proposed infiltration basin located at the southerly most corner of the site.

  - A gas station is proposed within this DMA. Catch basins in an around the gas station are to be outfitted with inline catch basin inserts (FlexStorm Inlet Filters) designed to catch and retain oils, fossil fuels and hydrocarbons.

- DMA 'C' is comprised of the landscaped slope along the easterly project boundary. This drainage area is designed to be self treating.

Development of this site will require the preparation of a new tentative tract map, TPM 37788.

Entrance to the site shall be obtained from Bedford Canyon Road.

The existing site is vacant and in a mass graded condition.

The site's land use summary is summarized in the following table:

Description	Area (AC.)
Undeveloped Commercial Site within Tract 36294	10.03 ac
Commercial	13.80 ac
Revegetated Slope - Natural	2.80 ac
Undeveloped - Natural	1.17 ac
Total	27.80 ac

PROJECT INFORMATION	
Type of Project:	Commercial
Planning Area:	Arantine Hills Specific Plan
Community Name:	Bedford (formerly Arantine Hills)
Development Name:	Bedford Commercial Center
PROJECT LOCATION	
Latitude & Longitude (DMS):	Lat: 33°49'9.70"N Long: -117°31'14.36"W
Project Watershed and Sub-Watershed:	Santa Ana River Watershed, Bedford Wash / Temescal Wash sub-watershed
Gross Acres:	27.8 acres
APN(s):	279-240-019, -021 & -033
Map Book and Page No.:	MB 456/23-38
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Retail, Gas Station, Hotel
Proposed or Potential SIC Code(s)	5399, 5541, 7011
Area of Impervious Project Footprint (SF)	916,500 s.f. +/-
Total Area of proposed Impervious Surfaces within the Project Footprint (SF)/or Replacement	0 s.f.
Does the project consist of offsite road improvements?	☐ Y ☒ N
Does the project propose to construct unpaved roads?	☐ Y ☒ N
Is the project part of a larger common plan of development (phased project)?	☒ Y ☐ N
EXISTING SITE CHARACTERISTICS	
Total area of existing Impervious Surfaces within the Project limits Footprint (SF)	0 s.f.
Is the project located within any MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	Not in a cell
Are there any natural hydrologic features on the project site?	☐ Y ☒ N
Is a Geotechnical Report attached?	☒ Y ☐ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)	
What is the Water Quality Design Storm Depth for the project?	0.85 inches

A.1 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the local vicinity and existing site. In addition, include all grading, drainage, landscape/plant palette and other pertinent construction plans in Appendix 2. At a **minimum**, your WQMP Site Plan should include the following:

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling
- BMP Locations (Lat/Long)

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Co-Permittee plan reviewer must be able to easily analyze your project utilizing this template and its associated site plans and maps.

A.2 Identify Receiving Waters

Using Table A.1 below, list in order of upstream to downstream, the receiving waters that the project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated beneficial uses, and proximity, if any, to a RARE beneficial use. Include a map of the receiving waters in Appendix 1.

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Bedford Canyon Wash	None	None	No RARE designation
Temescal Creek Reach, Reach 2	None	AGR, IND, GWR, REC 1, REC 2, WARM	No RARE designation
Temescal Creek, Reach 1	pH	REC1, REC2, WARM, WILD	No RARE designation
Santa Ana River (Reach 3)	Copper, Lead, Pathogens *(Pathogens, Nitrate)*	AGR, GWR, REC1, REC2, WARM, WILD, RARE	10 miles
Prado Dam	Nutrients and Pathogens	AGR, GWR, REC1, REC 2, WARM, WILD, RARE, SPWN	10 miles
Santa Ana River (Reach 2)	Indicator Bacteria	AGR, GWR, REC1, REC2, WARM, WILD, RARE	No RARE designation
Santa Ana River (Reach 1)	None	REC1, REC2, WARM, WILD	No RARE designation
Pacific Ocean	None	None	No RARE designation

A.3 Additional Permits/Approvals required for the Project:

Table A.2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☒ Y	☐ N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	☒ Y	☐ N
US Army Corps of Engineers, CWA Section 404 Permit	☒ Y	☐ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☒ Y	☐ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)* City of Corona Grading and Building Permits	☒ Y	☐ N

If yes is answered to any of the questions above, the Co-Permittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Section B: Optimize Site Utilization (LID Principles)

Review of the information collected in Section 'A' will aid in identifying the principal constraints on site design and selection of LID BMPs as well as opportunities to reduce imperviousness and incorporate LID Principles into the site and landscape design. For example, constraints might include impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, high-intensity land use, heavy pedestrian or vehicular traffic, utility locations or safety concerns. Opportunities might include existing natural areas, low areas, oddly configured or otherwise unbuildable parcels, easements and landscape amenities including open space and buffers (which can double as locations for bioretention BMPs), and differences in elevation (which can provide hydraulic head). Prepare a brief narrative for each of the site optimization strategies described below. This narrative will help you as you proceed with your LID design and explain your design decisions to others.

The 2010 Santa Ana MS4 Permit further requires that LID Retention BMPs (Infiltration Only or Harvest and Use) be used unless it can be shown that those BMPs are infeasible. Therefore, it is important that your narrative identify and justify if there are any constraints that would prevent the use of those categories of LID BMPs. Similarly, you should also note opportunities that exist which will be utilized during project design. Upon completion of identifying Constraints and Opportunities, include these on your WQMP Site plan in Appendix 1.

Consideration of "highest and best use" of the discharge should also be considered. For example, Lake Elsinore is evaporating faster than runoff from natural precipitation can recharge it. Requiring infiltration of 85% of runoff events for projects tributary to Lake Elsinore would only exacerbate current water quality problems associated with Pollutant concentration due to lake water evaporation. In cases where rainfall events have low potential to recharge Lake Elsinore (i.e. no hydraulic connection between groundwater to Lake Elsinore, or other factors), requiring infiltration of Urban Runoff from projects is counterproductive to the overall watershed goals. Project proponents, in these cases, would be allowed to discharge Urban Runoff, provided they used equally effective filtration-based BMPs.

Site Optimization

The following questions are based upon Section 3.2 of the WQMP Guidance Document. Review of the WQMP Guidance Document will help you determine how best to optimize your site and subsequently identify opportunities and/or constraints, and document compliance.

Did you identify and preserve existing drainage patterns? If so, how? If not, why?

- *Yes. Bedford Canyon Wash located along the project's southerly perimeter will maintain its existing drainage pattern as will the project site, draining from the southwest to northeast.*

Did you identify and protect existing vegetation? If so, how? If not, why?

- *Existing vegetation was not preserved. The project proposed to import dirt and elevate the entire site approximately 10 feet. The Import is needed to ensure that the project will be able to connect to the public utilities within Bedford Canyon Road as well as to ensure adequate drainage towards Bedford Canyon Wash.*

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

- *Yes, an infiltration basin is proposed for the project site where infiltration rates are feasible.*

Did you identify and minimize impervious area? If so, how? If not, why?

- *Yes. The site design meets the minimum standards per the Riverside County LID Handbook and City of Corona requirements*

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

- *Yes. Impervious areas will drain to pervious landscape areas as depicted on the site plan. When not feasible runoff will be conveyed to the project's catch basin and storm drain system before being routed to the Infiltration Basin.*

Section C: Delineate Drainage Management Areas (DMAs)

Utilizing the procedure in Section 3.3 of the WQMP Guidance Document which discusses the methods of delineating and mapping your project site into individual DMAs, complete Table C.1 below to appropriately categorize the types of classification (e.g., Type A, Type B, etc.) per DMA for your project site. Upon completion of this table, this information will then be used to populate and tabulate the corresponding tables for their respective DMA classifications.

Table C.1 DMA Classifications

DMA Name or ID	Surface Type(s)[1][2]	Area (Sq. Ft.)	DMA Type
DMA 'A'	Mixed – Commercial (part of approved WQMP for Tr 36294)	420,780 sf	D
DMA 'B'	Mixed – Commercial	602,100 sf.	D
DMA 'C'	Landscaped Slopes	122,436 sf.	A

[1]Reference Table 2-1 in the WQMP Guidance Document to populate this column
[2]If multi-surface provide back-up

Table C.2 Type 'A', Self-Treating Areas

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
DMA 'C'	122,436 sf.	Revegetated	Drip

Table C.3 Type 'B', Self-Retaining Areas

Self-Retaining Area				**Type 'C' DMAs that are draining to the Self-Retaining Area**		
DMA Name/ ID	Post-project surface type	Area (square feet) [A]	Storm Depth (inches) [B]	DMA Name / ID	[C]from Table C.4 = [C]	Required Retention Depth (inches) [D]
N/A						

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet) [A]	Post-project surface type	Impervious fraction [B]	Product [C] = [A] x [B]	DMA name /ID	Area (square feet) [D]	Ratio [C]/[D]
N/A							

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
DMA 'A'	Existing Infiltration Basin '1' - Tr. 36294
DMA 'B'	Proposed Infiltration Basin '2'

Note: More than one drainage management area can drain to a single LID BMP, however, one drainage management area may not drain to more than one BMP.

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream 'Highest and Best Use' for stormwater runoff (see discussion in Chapter 2.4.4 of the WQMP Guidance Document for further details)? ☐ Y ☒ N

If yes has been checked, Infiltration BMPs shall not be used for the site; proceed to section D.3

If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermittee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Co-Permittee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the WQMP Guidance Document. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? ☐ Y ☒ N

Infiltration Feasibility

Table D.1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the WQMP Guidance Document in Chapter 2.4.5. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D.1 Infiltration Feasibility

Does the project site…	YES	NO
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		X
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		X
If Yes, list affected DMAs:		
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?		X
If Yes, list affected DMAs:		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?		X
If Yes, list affected DMAs:		
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		X
If Yes, list affected DMAs:		
…geotechnical report identify other site-specific factors that would preclude effective and safe infiltration?		X
Describe here:		

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs should not be used for those DMAs and you should proceed to the assessment for Harvest and Use below.

D.2 Harvest and Use Assessment

Please check what applies*:*

☐ Reclaimed water will be used for the non-potable water demands for the project.

☐Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verify with the Copermittee).

☒The Design Capture Volume will be addressed using Infiltration Only BMPs. In such a case, Harvest and Use BMPs are still encouraged, but it would not be required if the Design Capture Volume will be infiltrated or evapotranspired.

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If none of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for Irrigation Use BMPs on your site:

Step 1: Identify the total area of irrigated landscape on the site, and the type of landscaping used.

Total Area of Irrigated Landscape: N/A

Type of Landscaping (Conservation Design or Active Turf): N/A

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for irrigation use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: N/A

Step 3: Cross reference the Design Storm depth for the project site (see Exhibit A of the WQMP Guidance Document) with the left column of Table 2-3 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

Enter your EIATIA factor: N/A

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum irrigated area that would be required.

Minimum required irrigated area: N/A

Step 5: Determine if harvesting stormwater runoff for irrigation use is feasible for the project by comparing the total area of irrigated landscape (Step 1) to the minimum required irrigated area (Step 4).

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
N/A	N/A

Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for toilet flushing uses on your site:

Step 1: Identify the projected total number of daily toilet users during the wet season, and account for any periodic shut downs or other lapses in occupancy:

Projected Number of Daily Toilet Users: N/A

Project Type: N/A

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for toilet use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: N/A

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-2 in Chapter 2 to determine the minimum number or toilet users per tributary impervious acre (TUTIA).

Enter your TUTIA factor: N/A

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of toilet users that would be required.

Minimum number of toilet users: N/A

Step 5: Determine if harvesting stormwater runoff for toilet flushing use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required Toilet Users (Step 4)	Projected number of toilet users (Step 1)
N/A	N/A

Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

N/A

Step 1: Identify the projected average daily non-potable demand, in gallons per day, during the wet season and accounting for any periodic shut downs or other lapses in occupancy or operation.

Average Daily Demand: N/A

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for the identified non-potable use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: N/A

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-4 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-4: N/A

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of gallons per day of non-potable use that would be required.

Minimum required use: N/A

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the projected average daily use (Step 1) to the minimum required non-potable use (Step 4).

Minimum required non-potable use (Step 4)	Projected average daily use (Step 1)
N/A	N/A

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment per Section 3.4.2 of the WQMP Guidance Document.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:

☐ LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).

☐ A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee to discuss this option. Proceed to Section E to document your alternative compliance measures.

D.4 Feasibility Assessment Summaries

From the Infiltration, Harvest and Use, Bioretention and Biotreatment Sections above, complete Table D.2 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
DMA 'A'	☒	☐	☐	☐	☐
DMA 'B'	☒	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

- A gas station is proposed within DMA 'B'. Therefore, the catch basins in an around the gas station are to be outfitted with inline catch basin inserts (FlexStorm Inlet Filters) designed to catch and retain oils, fossil fuels and hydrocarbons.

For those DMAs where LID BMPs are not feasible, provide a brief narrative below summarizing why they are not feasible, include your technical infeasibility criteria in Appendix 5, and proceed to Section E below to document Alternative Compliance measures for those DMAs. Recall that each proposed DMA must pass through the LID BMP hierarchy before alternative compliance measures may be considered.

N/A

D.5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First**,** calculate the Design Capture Volume for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second**,** design the LID BMP to meet the required V_{BMP} using a method approved by the Copermittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D.3 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	DMA (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Enter BMP Name / Identifier Here*		
	[A]		[B]	[C]	[A] x [C]			
DMA 'B'	*602,100*	*Mixed Surface Types*	*0.8*	*0.60*	*360,836*	*Design Storm Depth (in)*	*DCV, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
	$A_T = \Sigma[A]$				$\Sigma = [D]$	[E]	$[F] = \frac{[D]x[E]}{12}$	[G]
	602,100 sf				*360,836*	*0.85 in*	*25,560 cf*	*27,000 cf*

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document
[E] is obtained from Exhibit A in the WQMP Guidance Document
[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

Section E: Alternative Compliance (LID Waiver Program)

NOT APPLICABLE

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to LID waiver approval by the Copermittee). Check one of the following Boxes:

☒ LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

- *Or* -

☐ The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Co-Permittee and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The following alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

N/A

E.1 Identify Pollutants of Concern

Utilizing Table A.1 from Section A above which noted your project's receiving waters and their associated EPA approved 303(d) listed impairments, cross reference this information with that of your selected Priority Development Project Category in Table E.1 below. If the identified General Pollutant Categories are the same as those listed for your receiving waters, then these will be your Pollutants of Concern and the appropriate box or boxes will be checked on the last row. The purpose of this is to document compliance and to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs.

Table E.1 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)	General Pollutant Categories							
	Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease
☐ Detached Residential Development	P	N	P	P	N	P	P	P
☐ Attached Residential Development	P	N	P	P	N	P	P	P(2)
☐ Commercial/Industrial Development	P(3)	P	P(1)	P(1)	P(5)	P(1)	P	P
☐ Automotive Repair Shops	N	P	N	N	P(4, 5)	N	P	P
☐ Restaurants (>5,000 ft^2)	P	N	N	N	N	N	P	P
☐ Hillside Development (>5,000 ft^2)	P	N	P	P	N	P	P	P
☐ Parking Lots (>5,000 ft^2)	P(6)	P	P(1)	P(1)	P(4)	P(1)	P	P
☐ Retail Gasoline Outlets	N	P	N	N	P	N	P	P
Project Priority Pollutant(s) of Concern	☐	☐	☐	☐	☐	☐	☐	☐

P = Potential
N = Not Potential
(1) A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected
(2) A potential Pollutant if the project includes uncovered parking areas; otherwise not expected
(3) A potential Pollutant is land use involving animal waste
(4) Specifically petroleum hydrocarbons
(5) Specifically solvents
(6) Bacterial indicators are routinely detected in pavement runoff

E.2 Stormwater Credits

Projects that cannot implement LID BMPs but nevertheless implement smart growth principles are potentially eligible for Stormwater Credits. Utilize Table 3-8 within the WQMP Guidance Document to identify your Project Category and its associated Water Quality Credit. If not applicable, write N/A.

Table E.2 Water Quality Credits

Qualifying Project Categories	Credit Percentage[2]
Total Credit Percentage[1]	

[1]*Cannot Exceed 50%*
[2]*Obtain corresponding data from Table 3-8 in the WQMP Guidance Document*

E.3 Sizing Criteria

After you appropriately considered Stormwater Credits for your project, utilize Table E.3 below to appropriately size them to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.2 of the WQMP Guidance Document for further information.

Table E.3 Treatment Control BMP Sizing

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Area x Runoff Factor		*Enter BMP Name / Identifier Here*		
	[A]		[B]	[C]	[A] x [C]				
						Design Storm Depth (in)	*Minimum Design Capture Volume or Design Flow Rate (cubic feet or cfs)*	*Total Storm Water Credit % Reduction*	*Proposed Volume or Flow on Plans (cubic feet or cfs)*
	A_T = Σ[A]				Σ= [D]	[E]	$[F] = \frac{[D]x[E]}{[G]}$	[F] X (1-[H])	[I]

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document
[E] is for Flow-Based Treatment Control BMPs [E] = .2, for Volume-Based Control Treatment BMPs, [E] obtained from Exhibit A in the WQMP Guidance Document
[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12
[H] is from the Total Credit Percentage as Calculated from Table E.2 above
[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

E.4 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must have a removal efficiency of a medium or high effectiveness as quantified below:

- **High**: equal to or greater than 80% removal efficiency
- **Medium**: between 40% and 80% removal efficiency

Such removal efficiency documentation (e.g., studies, reports, etc.) as further discussed in Chapter 3.5.2 of the WQMP Guidance Document, must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table E.4 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]

[1] Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.
[2] Cross Reference Table E.1 above to populate this column.
[3] As documented in a Co-Permittee Approved Study and provided in Appendix 6.

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

Once you have determined that the LID design is adequate to address water quality requirements, you will need to assess if the proposed LID Design may still create a HCOC. Review Chapters 2 and 3 (including Figure 3-7) of the WQMP Guidance Document to determine if your project must mitigate for Hydromodification impacts. If your project meets one of the following criteria which will be indicated by the check boxes below, you do not need to address Hydromodification at this time. However, if the project does not qualify for Exemptions 1, 2 or 3, then additional measures must be added to the design to comply with HCOC criteria. This is discussed in further detail below in Section F.2.

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The Copermittee has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply.

HCOC EXEMPTION 2: The volume and time of concentration[1] of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the Co-Permittee

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, report results in Table F.1 below and provide your substantiated hydrologic analysis in Appendix 7.

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	**Post-condition**	**% Difference**
Time of Concentration	24.44 min	10.8 min.	-46.6% 13.04 min
Volume (Cubic Feet)	14,247 cf 0.32 ac-ft	92,806 cf 2.13 ac-ft	651.4% 78,559 cf 1.81 ac-ft

[1] Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (for example, Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River, or other lake, reservoir or naturally erosion resistant feature) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Susceptibility Maps.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply and note below which adequate sump applies to this HCOC qualifier:

N/A

F.2 HCOC Mitigation

If none of the above HCOC Exemption Criteria are applicable, HCOC criteria is considered mitigated if they meet one of the following conditions:

a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.

b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.

c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

Be sure to include all pertinent documentation used in your analysis of the items a, b or c in Appendix 7.

☒ None of the above.

Development impacts will be mitigated by the proposed on-site Infiltration/Detention Basin located in DMA B. As a result, reducing post-project flow rates to less than pre-project flows under all hydrological conditions evaluated, including the County's Hydromodification criteria by limiting post-project flows discharged from the Project to no greater than 110 percent of the pre-project flows for the 2-year, 24-hour storm event. As this is a Preliminary WQMP, complete BMP design details are not available at this time. Complete design details and routing analysis will be provided within the Final WQMP. Refer to Appendix 7 for pertinent documentation.

Section G: Source Control BMPs

Source control BMPs include permanent, structural features that may be required in your project plans — such as roofs over and berms around trash and recycling areas — and Operational BMPs, such as regular sweeping and "housekeeping", that must be implemented by the site's occupant or user. The MEP standard typically requires both types of BMPs. In general, Operational BMPs cannot be substituted for a feasible and effective permanent BMP. Using the Pollutant Sources/Source Control Checklist in Appendix 8, review the following procedure to specify Source Control BMPs for your site:

1. ***Identify Pollutant Sources*:** Review Column 1 in the Pollutant Sources/Source Control Checklist. Check off the potential sources of Pollutants that apply to your site.

2. ***Note Locations on Project-Specific WQMP Exhibit*:** Note the corresponding requirements listed in Column 2 of the Pollutant Sources/Source Control Checklist. Show the location of each Pollutant source and each permanent Source Control BMP in your Project-Specific WQMP Exhibit located in Appendix 1.

3. ***Prepare a Table and Narrative*:** Check off the corresponding requirements listed in Column 3 in the Pollutant Sources/Source Control Checklist. In the left column of Table G.1 below, list each potential source of runoff Pollutants on your site (from those that you checked in the Pollutant Sources/Source Control Checklist). In the middle column, list the corresponding permanent, Structural Source Control BMPs (from Columns 2 and 3 of the Pollutant Sources/Source Control Checklist) used to prevent Pollutants from entering runoff. **Add additional narrative** in this column that explains any special features, materials or methods of construction that will be used to implement these permanent, Structural Source Control BMPs.

4. ***Identify Operational Source Control BMPs:*** To complete your table, refer once again to the Pollutant Sources/Source Control Checklist. List in the right column of your table the Operational BMPs that should be implemented as long as the anticipated activities continue at the site. Copermittee stormwater ordinances require that applicable Source Control BMPs be implemented; the same BMPs may also be required as a condition of a use permit or other revocable Discretionary Approval for use of the site.

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff Pollutants	Structural Source Control BMPs	Operational Source Control BMPs
On-site storm drain inlets	Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Makers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify	Maintain and periodically repaint or replace inlet markings. Provide stormwater pollution prevention information to new site owners, lessees, or operators. See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to

		storm drains or to store or deposit materials so as to create a potential discharge to storm drains."
Landscape/Outdoor Pesticide Use	Preserve, existing native trees, shrubs, and ground cover to the maximum extent possible. Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. Where landscaping areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. Consider using pest-resistant plants, especially to hardscape. To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	Maintain landscaping using minimum or no pesticides. See applicable operation BMPs in "What you show know for…..Landscaping and Gardening". Provide IPM information to new owners, lessees and operators.
Pools, spas, ponds, decorative fountains, and other water features.	If the Co-Permittee requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.	See applicable operational BMPs in "Guidelines for Maintaining Your Swimming Pool, Jacuzzi and Garden Fountain"
Vehicle/Equipment Repair and Maintenance	Vehicle repairs shall be kept to those that can be considered "self-contained". Clean-up methods shall be done by dry methods. Fluids drained from a vehicle should be contained in a recyclable container and turned into a local facility for recycling.	No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinse water from parts cleaning into storm drains.
Fire Sprinkler Test Water	Fire sprinkler test water shall be drained to the sanitary sewer.	See the note in Fact Sheet SC – 41, "Building and Grounds Maintenance,' in the CASQA Stormwater Quality Handbooks at ww.cabmphandbooks.com
Miscellaneous Drain or Wash Water or Other Sources Roofing, gutters, and trim	Avoid roofing, gutters, and trim made of copper or other unprotected metals	

Section H: Construction Plan Checklist

Populate Table H.1 below to assist the plan checker in an expeditious review of your project. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. This table is to be completed with the submittal of your final Project-Specific WQMP.

- Final engineering construction plans will be provided with the final WQMP. The Tentative Parcel Map is included in the appendix of this Preliminary WQMP.
- Treatment for DMA 'A' is included in the approved WQMP for Tract 36294. Water Quality objectives are being met within the infiltration basing for said Tract 36294.

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)	BMP Location (Lat/Long)
DMA A	Basin "1"	Rough Grading Plan; Sheets 29-31	LAT: 33°49'4.02"N LONG: 117°31'7.28"W
DMA B	Basin "2"	TPM	LAT: 33°49'8.85"N LONG: 117°31'4.71"W

Note that the updated table — or Construction Plan WQMP Checklist — is **only a reference tool** to facilitate an easy comparison of the construction plans to your Project-Specific WQMP. Co-Permittee staff can advise you regarding the process required to propose changes to the approved Project-Specific WQMP.

Section I: Operation, Maintenance and Funding

The Copermittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement facility maintenance in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

Your local Co-Permittee will also require that you prepare and submit a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Details of these requirements and instructions for preparing a Stormwater BMP Operation and Maintenance Plan are in Chapter 5 of the WQMP Guidance Document.

Maintenance Mechanism: Basin 1 = Home Owners' Association (HOA)
Basin 2 = Property Owners Association (POA)

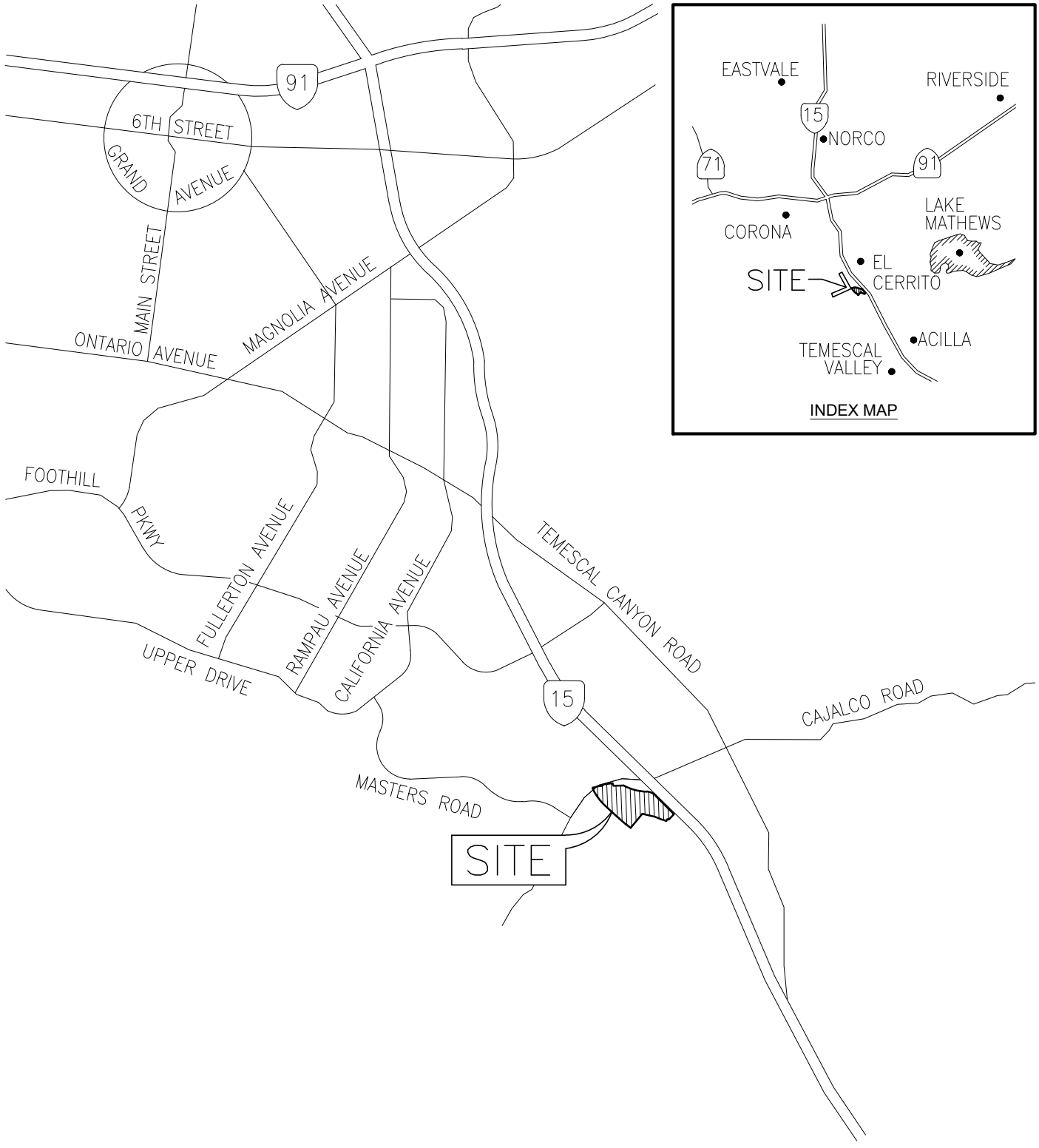
Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

☒ Y ☐ N

Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map



HUNSAKER & ASSOCIATES
IRVINE, INC
INLAND EMPIRE REGION
2900 ADAMS STREET, SUITE A-15
RIVERSIDE CA 92504 (951)352-7200
PLANNING/ENGINEERING/SURVEYING/GOVERNMENT RELATIONS

N
W HUNSAKER E
S

NOT TO SCALE

FIGURE 1: VICINITY MAP
T.T.M. 37788

H:\00539\Engineering\Hydrology\Commercial Site\Parts\Maps\00539-Vicinity-Fig-1.dwg



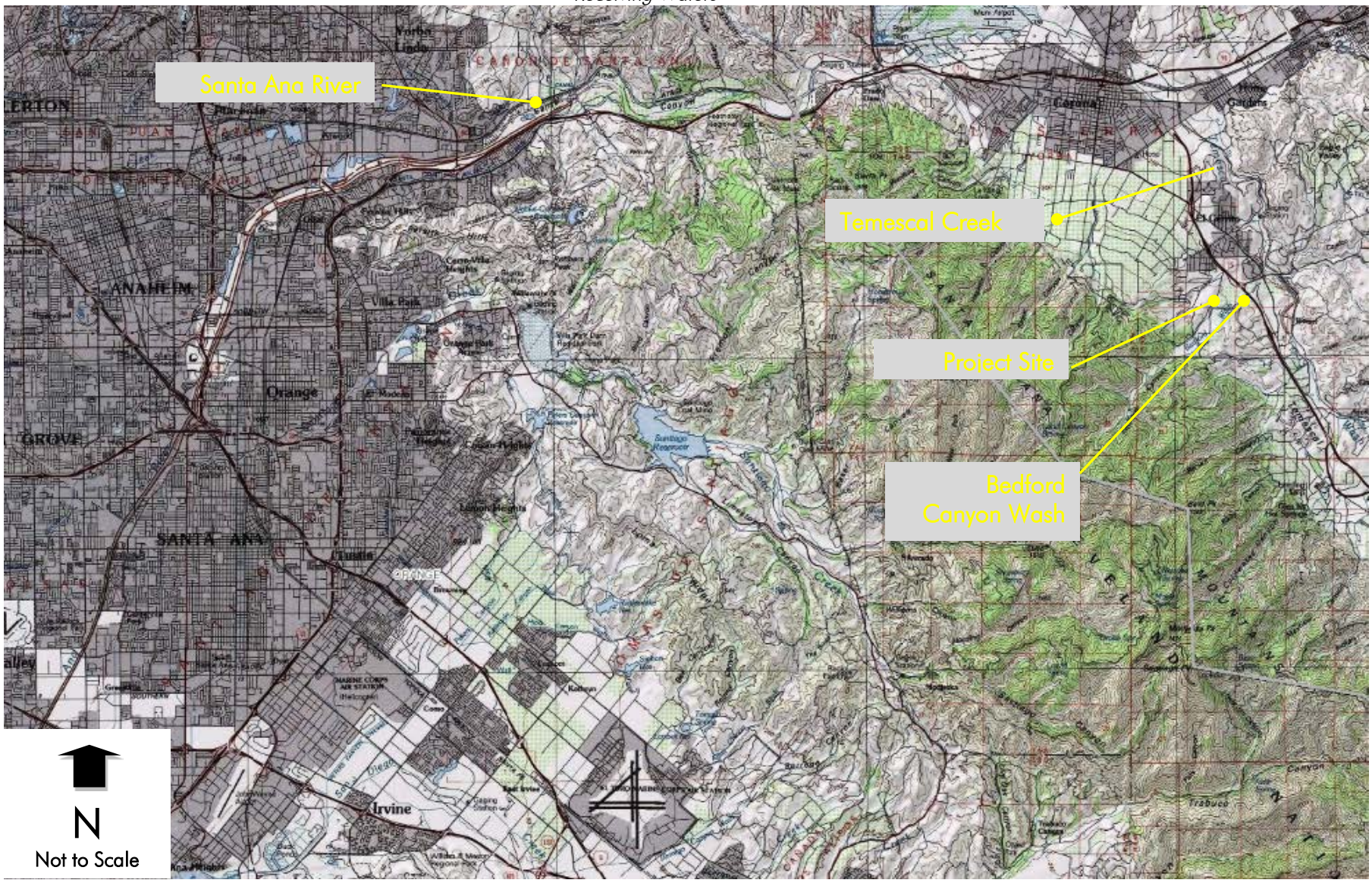
HUNSAKER & ASSOCIATES
IRVINE, INC
INLAND EMPIRE REGION
2900 ADAMS STREET, SUITE A-15
RIVERSIDE CA 92504 (951)352-7200
PLANNING/ENGINEERING/SURVEYING/GOVERNMENT RELATIONS

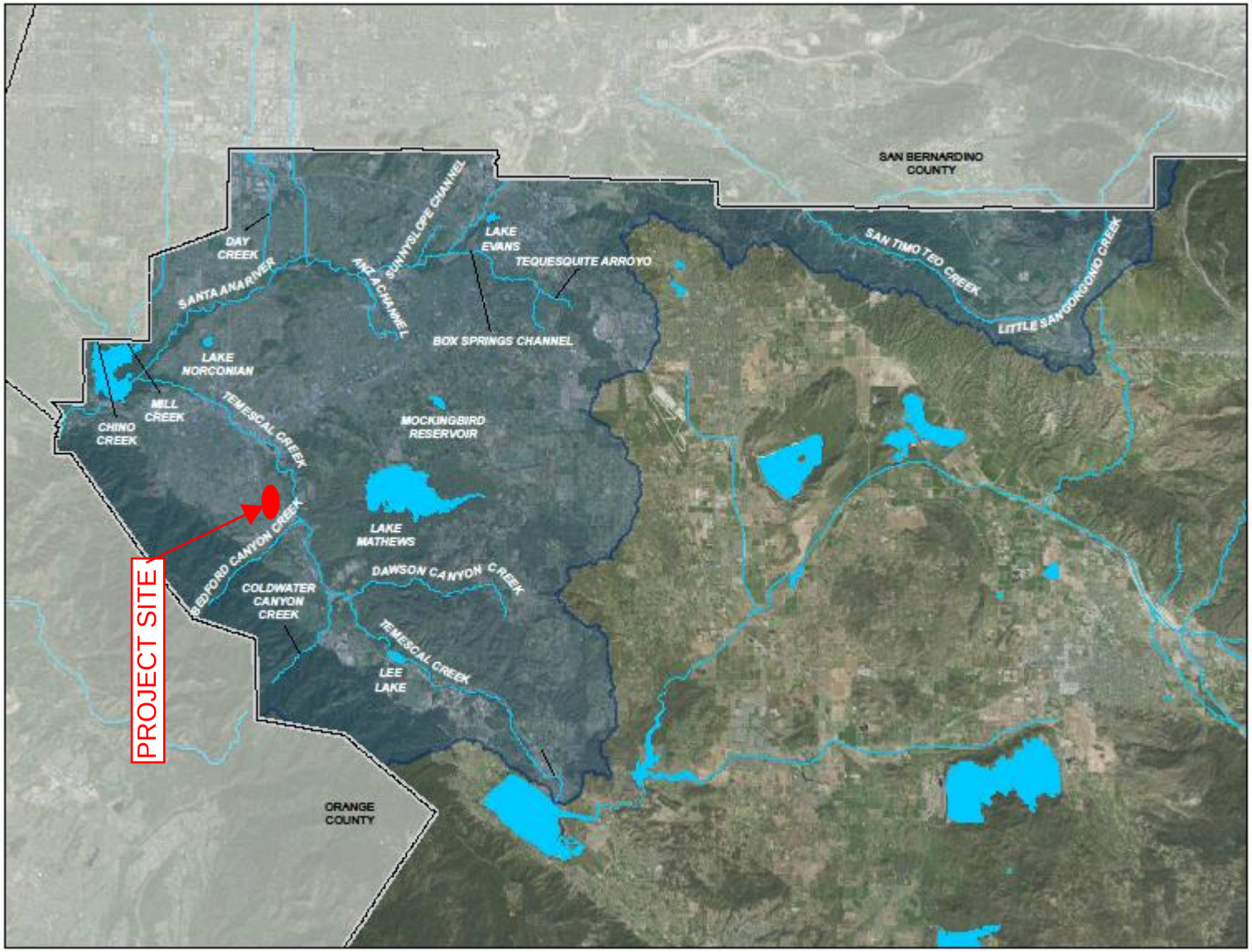
N
W HUNSAKER E
S

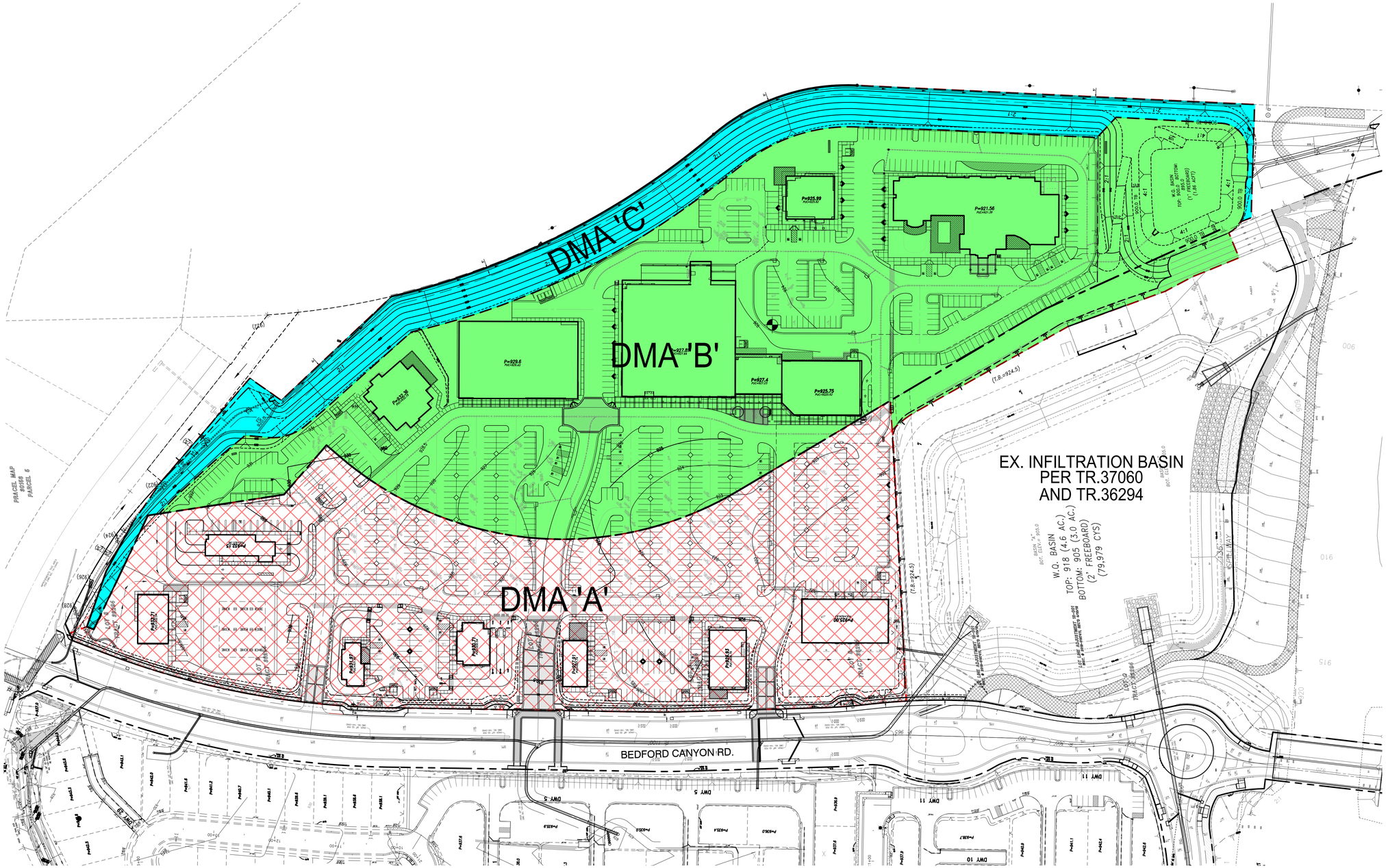
FIGURE 2: AERIAL PHOTOGRAPH
T.T.M. 37788

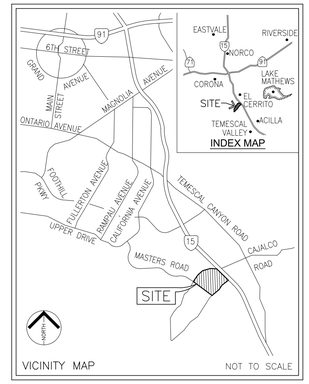
H:\00539\Engineering\Hydrology\Commercial Site\Parts\Maps\00539-Vicinity-Fig-2-Aerial.dwg

Receiving Waters




SAN BERNARDINO COUNTY
DAY CREEK
SUNNYSLOPE CHANNEL
LAKE EVANS
TEQUESQUITE ARROYO
SAN TIMOTEO CREEK
LITTLE SAN GORGONIO CREEK
SANTA ANA RIVER
ANZA CHANNEL
BOX SPRINGS CHANNEL
LAKE NORCONIAN
MILL CREEK
CHINO CREEK
TEMESCAL CREEK
MOCKINGBIRD RESERVOIR
PROJECT SITE
LAKE MATHEWS
BEDFORD CANYON CREEK
DAWSON CANYON CREEK
COLDWATER CANYON CREEK
TEMESCAL CREEK
LEE LAKE
ORANGE COUNTY





LEGEND

DRAINAGE MANAGEMENT AREA 'A' NOT A PART – INCLUDED IN WQMP FOR TR 37060 AND TR 36294	= 10.03	AC.
DRAINAGE MANAGEMENT AREA 'B'	= 13.8	AC.
DRAINAGE MANAGEMENT AREA 'C'	= 2.8	AC.

RIVERSIDE COUNTRY FLOOD COLTROL DISTRICT
W.Q.M.P. EXHIBIT

DRAINAGE MANAGEMENT AREA MAP FOR 'BEDFORD COMMERECIAL SITE' TENTATIVE TRACT MAP 37788

SCALE:	1" = 80'
DATE:	JAN. 2020
DESIGNED:	BRL
CHECKED:	PRH
PLN CK REF:	
F.B.	

HUNSAKER & ASSOCIATES
IRVINE, INC
INLAND EMPIRE REGION
2900 ADAMS STREET, SUITE A-15
RIVERSIDE CA 92504 (951)352-7200
PLANNING/ENGINEERING/SURVEYING/GOVERNMENT RELATIONS

W.O.	4334-2
SHEET	1
OF	2 SHEETS
DWG. NO.	

H:\00539\Engineering\WQMP\Commercial Update\Parts\Appendix 1 - Maps\00539-Commercial-Site-DMA-Map - 2019-12-12.dwg

PRINTED: 1/10/2020 2:14 PM



ACREAGE SUMMARY:

		AREA
IMPERVIOUS AREAS		
– BUILDINGS (PROPOSED)	=	3.5 AC.
– PAVEMENT	=	14.4 AC.
– SIDEWALKS	=	1.7 AC.
SUB–TOTAL	=	19.7 AC.
PERVIOUS AREAS		
– LANDSCAPE SLOPES	=	3.3 AC.
– COMMERCIAL LANDSCAPE	=	4.1 AC.
– DETENTION & W.Q. BASIN BOTTOM	=	0.3 AC.
– DECOMPOSED GRANITE	=	0.4 AC.
SUB–TOTAL	=	8.1 AC.
TOTAL SITE AREA	=	27.8 AC.

LEGEND

- PROJECT BOUNDARY
- PROPOSED DRAINAGE BOUNDARY LINE
- DMA BOUNDARY
- NAP — NOT A PART
- PROPOSED STORM DRAIN & FLOW DIRECTION (ONSITE)
- PROPOSED VEGETATED SWALE BMP
- EXISTING STORM DRAIN & FLOW DIRECTION (PUBLIC)
- DIRECTION OF SURFACE FLOW (ONSITE)
- DIRECTION OF SURFACE FLOW (OFFSITE)
- BUILDINGS
- SELF TREATING AREA (LANDSCAPED SLOPES WITH BMPS) SITE DESIGN/LANDSCAPE PLANNING SD–10 EFFICIENT IRRIGATION SD–12
- OPEN SPACE AREA
- DETENTION / WATER QUALITY BASIN
- PAVED AREA WITH STREET SWEEPING BMP
- DECOMPOSED GRANITE
- CATCH BASIN WITH INLET STENCILING
- CATCH BASIN WITH INLET STENCILING AND FLEXSTORM PURE INSERT (OIL AND HYDROCARBON ABSORPTION DEVICE)
- DISCHARGE POINT (POINT OF COMPLIANCE)

NOTE:

- *SELF–TREATING AREA IS A NATURAL OR LANDSCAPED AREA THAT DRAINS OVERLAND OFF–SITE OR DIRECTLY TO THE STORM DRAIN SYSTEM*

LID PRACTICES TO BE IMPLEMENTED FOR THIS PROJECT INCLUDE:

- IMPERVIOUS AREA DISPERSION (HSC–2)
- INFILTRATION BASIN (INF–3)

SITE DESIGN AND SOURCE CONTROL BMP'S INCLUDE:

- INTEGRATED PEST MANAGEMENT (IPM) MEASURES
- SD–10 SITE DESIGN/LANDSCAPE PLANNING
- SD–11 ROOF RUNOFF CONTROLS
- SD–12 EFFICIENT IRRIGATION
- SD–13 STORM DRAIN SIGNAGE
- SD–31 MAINTENANCE BAYS & DOCKS
- SD–32 TRASH STORAGE AREAS
- FIRE SPRINKLERS DRAIN TO PRIMED P–TRAP SANITARY SEWER
- SECONDARY CONTAINMENT FOR ANY ROOF AIR CONDITIONING UNITS

ADDITIONAL STRUCTURAL AND NONSTRUCTURAL SOURCE CONTROL BMP'S (SEE PROJECT WQMP OPERATIONS AND MAINTENANCE PLAN FOR DETAILS):

- EDUCATION FOR TENANTS AND EMPLOYEES
- ACTIVITY RESTRICTIONS
- LANDSCAPE MANAGEMENT
- BMP MAINTENANCE
- TITLE 22 COMPLIANCE
- SPILL CONTINGENCY PLAN
- HAZARDOUS MATERIALS DISCLOSURE COMPLIANCE
- UNIFORM FIRE CODE IMPLEMENTATION
- PEAK STORM FLOW MITIGATION
- PRIVATE PARKING LOT SWEEPING
- DESIGN AND CONSTRUCT TRASH AND WASTE STORAGE AREAS
- EFFICIENT IRRIGATION SYSTEM AND LANDSCAPE DESIGN
- PROTECTION OF SLOPES AND CHANNELS
- AT GRADE LOADING DOCKS/DELIVERY AREAS
- LITTER CONTROL

0 40 80 160
SCALE: 1" = 80'

RIVERSIDE COUNTY FLOOD COLTROL DISTRICT
W.Q.M.P. EXHIBIT

BMP SITE PLAN
FOR 'BEDFORD COMMERECIAL SITE'
TENTATIVE TRACT MAP 37788

SCALE:	1" = 80'	W.O.	4334–2
DATE:	JAN. 2020	SHEET	2
DESIGNED:	BRL	OF	2 SHEETS
CHECKED:	PRH	DWG. NO.	
PLN CK REF:			
F.B.			

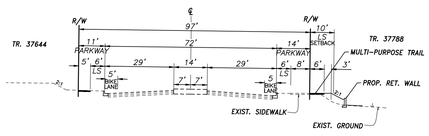
HUNSAKER & ASSOCIATES
IRVINE, INC
INLAND EMPIRE REGION
2900 ADAMS STREET, SUITE A–15
RIVERSIDE CA 92504 (951)352–7200
PLANNING/ENGINEERING/SURVEYING/GOVERNMENT RELATIONS

H:\00539\Engineering\WQMP\Commercial Update\Parts\Appendix 1 – Maps\00539–Commercial–Site–BMP–Map – 2019–12–12.dwg

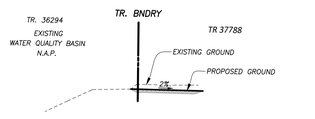
PRINTED: 1/10/2020 2:14 PM

Appendix 2: Construction Plans

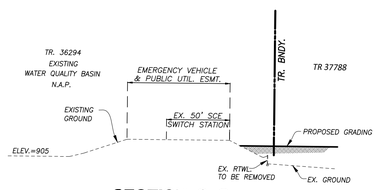
Grading and Drainage Plans



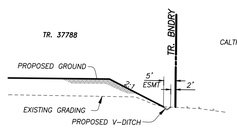
SECTION E-E
EXISTING BEDFORD CANYON ROAD



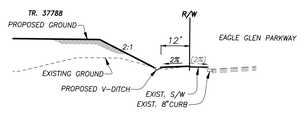
SECTION D-D
SCALE: N.T.S



SECTION C-C
SCALE: N.T.S



SECTION B-B
SCALE: N.T.S



SECTION A-A
SCALE: N.T.S

PREPARED BY:

HUNSAKER & ASSOCIATES
IRVINE, INC.
PLANNING • ENGINEERING • SURVEYING
Three Hughes • Irvine, CA 92618
FX: (949) 583-0759 • PH: (949) 583-1010

DATE	12/06/2019
W.O.	2749-18X
GROSS AREA	17.85±
CONTOUR INTERVAL	5'
NUMBERED LOTS	5
LETTERED LOTS	4
DATE OF MCG BASE FILE	12/04/19
DATE OF CDPG BASE FILE	12/04/19

CONCEPTUAL GRADING PLAN
BEDFORD MARKETPLACE

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

LGC Geotechnical, Inc.

PROJECT MEMORANDUM

To: Bedford Marketplace, LLC
5780 Fleet Street, Suite 225
Carlsbad, CA 92008

Date: December 4, 2019
Project No.: 19080-01

Attention: Mr. Glen Powles

From: Mr. Kevin Dyekman, CEG 2595 KAD

Subject: ***Updated Infiltration Testing for Proposed Water Quality Basin, Bedford Marketplace, Tracts 37030, 36294, and 37644, Corona, California***

References: Hunsaker & Associates, 2019, Conceptual Grading Plan, Bedford Market Place, dated October 14, 2019.

LGC Geotechnical, Inc. 2019, Preliminary Geotechnical Evaluation for Proposed Bedford Marketplace, Tracts 37030, 36294, and 37644, Corona, California, Project No. 19080-01, dated August 9, 2019.

In accordance with your requested, LGC Geotechnical, Inc. has prepared this memorandum in order summarize our updated infiltration testing for the proposed water quality basin, Bedford Marketplace, Tracts 37030, 36294, and 37644, located in Corona, California. The recent infiltration testing was performed in order to confirm the provisional design infiltration rate previously provided in our report dated August 9, 2019.

Based on previous nearby infiltration testing and knowledge of the site soils, a design infiltration rate of 2.0 inches per hour was previously provided for infiltration systems associated with Bedford Marketplace (LGC Geotechnical, 2019). Recent infiltration testing was performed within the location of the proposed water quality basin depicted on the Conceptual Grading Plan (Hunsaker, 2019) in order to confirm the previously provided infiltration rate. The estimation of infiltration rates was performed in general accordance with guidelines set forth by the County of Riverside. The recent infiltration test data is summarized in Table 1 on the following page.

Table 1

Summary of Infiltration Testing December 3, 2019

Boring/Infiltration Location	Approx. Depth Below EG (ft)	Infiltration Rate (in/hr.)	
		Tested	Design*
I-1C	5	31.5	10.5
I-2C	4.8	3.2	1.1
I-3C	5	11.2	3.7

*Includes a minimum factor of safety of 3 from Tested Rate per Table 1 – Infiltration Testing Requirements, County of Riverside Guidelines (2011).

Based on the recent confirmational infiltration testing performed, a design infiltration rate of 2.0 inches per hour is considered suitable for use in the design of the proposed water quality basin.

It should be emphasized that infiltration test results are only representative of the location and depth where they are performed. Varying subsurface conditions may exist outside of the test locations which could alter the calculated infiltration rates indicated above. Infiltration tests are performed using relatively clean water free of particulates, silt, etc.

Should you have any questions regarding this memo, please do not hesitate to contact our office.

January 27, 2015 Project No: 13208-01

Mr. John Sherwood
The New Home Company
85 Enterprise, Suite 450
Aliso Viejo, CA 92656

Subject: ***Summary of Field Infiltration Testing, Proposed Arantine Hills Residential Development, Tract No. 36294, City of Corona, California***

Introduction

In accordance with your request and authorization, LGC Geotechnical, Inc. has prepared this summary of field infiltration testing performed for the proposed basin located in the southeastern portion of the Arantine Hills Residential Development, Tract No. 36294 located in the City of Corona, California (Figure 1 – Site Location Map). The purpose of our study was to perform onsite infiltration testing as it relates to infiltration of future storm water.

Field Infiltration Testing

Field infiltration rate testing was performed in general accordance with guidelines set forth by the County of Riverside (2011). Two approximately 12-foot square areas were excavated to approximately 2 feet above basin design elevations in the northern and southern portions of the proposed infiltration basin (Figure 2 – Infiltration Testing Locations). Subsequent to excavating to the target elevation, three approximately 8 to 12-inch diameter test borings were hand excavated to approximate design basin elevations. The infiltration test borings were pre-soaked in accordance with the County guidelines. Based on the County of Riverside methodology, the tested field infiltration rates, summarized in Table 1, have normalized the three-dimensional flow that occurs within the field test to one-dimensional flow out of the bottom of the boring. The approximate locations of the field infiltration tests are shown on Figure 2 and the infiltration test data is attached.

TABLE 1

Summary of Field Infiltration Testing

Boring/Infiltration Location	Approx. Depth Below EG (ft)	Approx. Bottom of Infiltration Test Elevation (ft)	Infiltration Rate (in/hr)	
			Tested	Design*
I-1B	6	908	7.4	2.5
I-2B	6	908	27.7	9.2
I-3B	4	908	13.9	4.6

*Includes factor of safety of 3 from Tested Rate per Table 1 – Infiltration Testing Requirements, County of Riverside Guidelines (2011).

Groundwater

Groundwater was not encountered during the recent excavations for infiltration testing. Groundwater and seepage was also not encountered to the maximum explored depth of approximately 65 feet below existing grade during our previous subsurface evaluation (LGC, 2015a).

Seasonal fluctuations of groundwater elevations should be expected over time. In general, groundwater levels fluctuate with the seasons and local zones of perched groundwater may be present due to local seepage caused by irrigation and/or recent precipitation. Local perched groundwater conditions or surface seepage may develop once site development is completed.

Conclusions and Recommendations

The tested infiltration rates provided in the report are considered a general representation of the infiltration rates at the location of the proposed basin. It is our understanding that a preliminary infiltration rate of approximately 4.0 in/hr was utilized in the design of the proposed basin. It is our opinion that the infiltration rate used in the design adequately represents the site soils and is acceptable from a geotechnical viewpoint. In accordance with Appendix A of the Riverside County – Low Impact Development BMP Design Handbook, a minimum factor of safety of 3 has been applied to the tested rates in this report. It is the purview of the project civil engineer to determine which design infiltration rate should be used and if any additional factors of safety should be applied.

Please note, the testing of infiltration rates is highly dependent upon the materials encountered at the point of testing (i.e. location and depth of testing). Variations from our test results must be expected.

Limitations

Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable soils engineers and geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report.

It should be understood that LGC Geotechnical has relied on the accuracy of documents, verbal information, and other material and information provided by you and other associated parties in preparation of this report. LGC Geotechnical makes no warranties or guarantees as to the accuracy or completeness of information obtained from or compiled by others.

We appreciate this opportunity to be of service. Should you have any questions or concerns regarding this letter, please do not hesitate to contact our office.

Sincerely,

LGC Geotechnical, Inc.

Tim Lawson, CEG 1821, GE 2626
Geotechnical Engineer

Kevin Dyekman, CEG 2595
Project Geologist

KAD/TJL/aca

Attachments: References
Figure 1 – Site Location Map
Figure 2 – Infiltration Test Location Map
Field Infiltration Test Data

Distribution: (5) Addressee (4 wet-signed and 1 electronic)
(1) Hunsaker and Associates (via email)
Attn: Mr. Doug Staley
(1) CASC Engineering and Consulting (via email)
Attn: Mr. Glenn Budd

References

Allen, V., Connerton, A., and Carlson, C., 2011, Introduction to Infiltration Best Management Practices (BMP), Contech Construction Products, Inc., Professional Development Series, dated December 2011.

County of Riverside, 2011, Low Impact Developemnt BMP Design Handbook, Appendix A – Infiltration Testing, revised September 2011.

Hunsaker & Assoicates, 2015, 100-Scale Rough Grade Plans for Arantine Hills dated April 9, 2015.

LGC Geotechnical, Inc., 2014, Geotechnical Mass Grading Plan Review and Preliminary Geotechnical Recommendations for Proposed "Arantine" Residential Development, Tract 36294, City of Corona, California, Project No. 13208-01, dated August 7, 2014.

_____, 2015a, Preliminary Geotechnical Evaluation for Proposed Culvert Bridge Structure, "Arantine" Residential Development, Tract 36294, City of Corona, California, Project No. 13208-01, dated August 12, 2015.

_____, 2015b, Geotechnical Review of the Stockpile/Remedial Grading Plan, "Arantine Hills" Residential Development, Tract 36294, City of Corona, California, Project No. 13208-01, dated November 11, 2015.

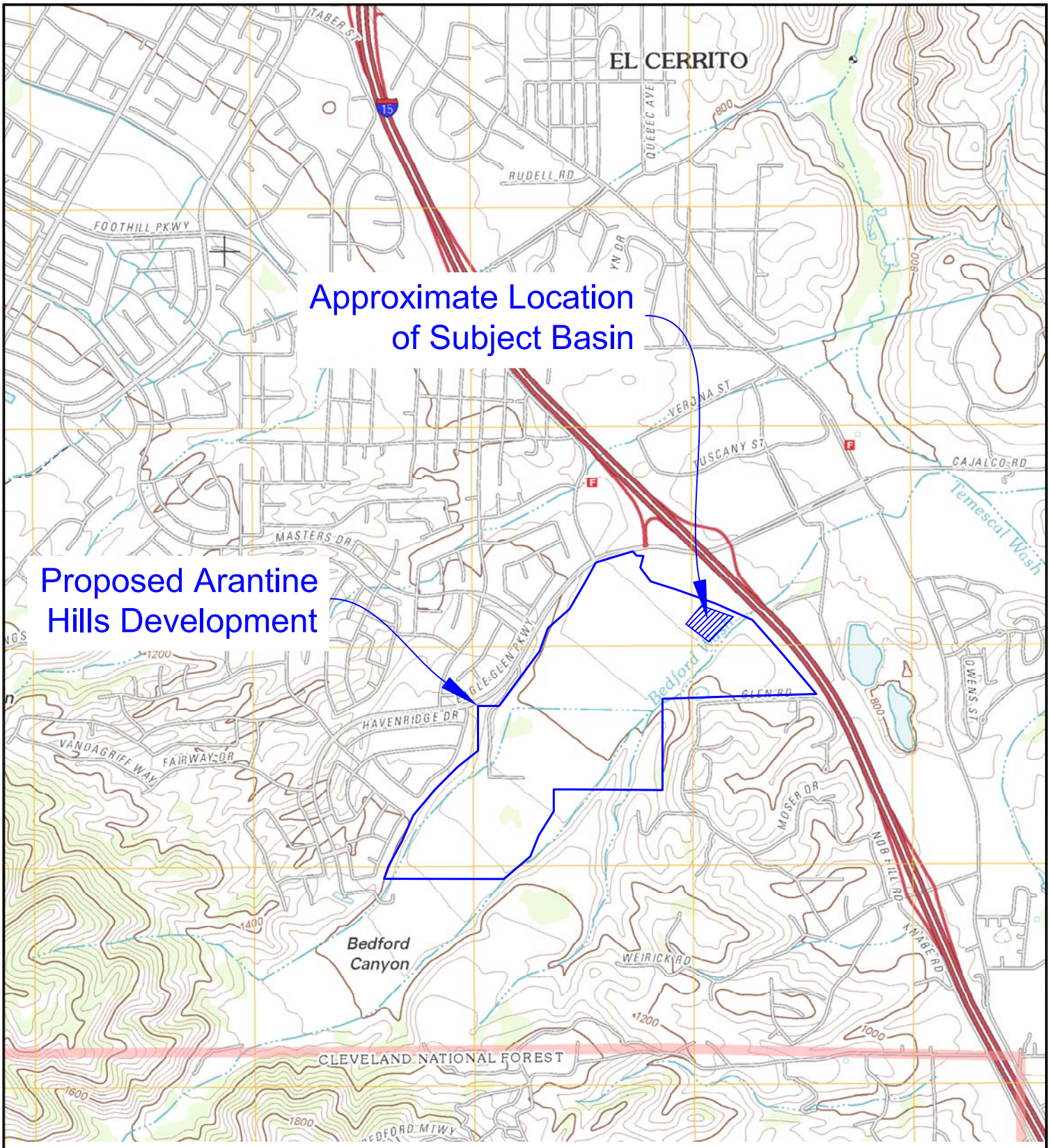
LOR Geotechnical Group, Inc., 2002, Preliminary Geotechnical Feasibility Investigation, 580 [sic] ± Acres, Bedford Canyon, Corona Area, Riverside County, California, Project No. 31558.1, dated March 25, 2002.

_____, 2003, Preliminary Update and Document Review of Seismic Hazards, 508 ± Acres, Bedford Canyon, Corona, California, Project No. 31558.3, dated February 5, 2003.

_____, 2004, Addendum Fault Investigation, 508 ± Acres, Arantine Hills, Corona, California, Project No. 31558.32, dated November 16, 2004.

_____, 2009, Arantine Hills Master Planned Community, City of Corona, Riverside County, California, Project No. 31558.14, dated October 15, 2009.

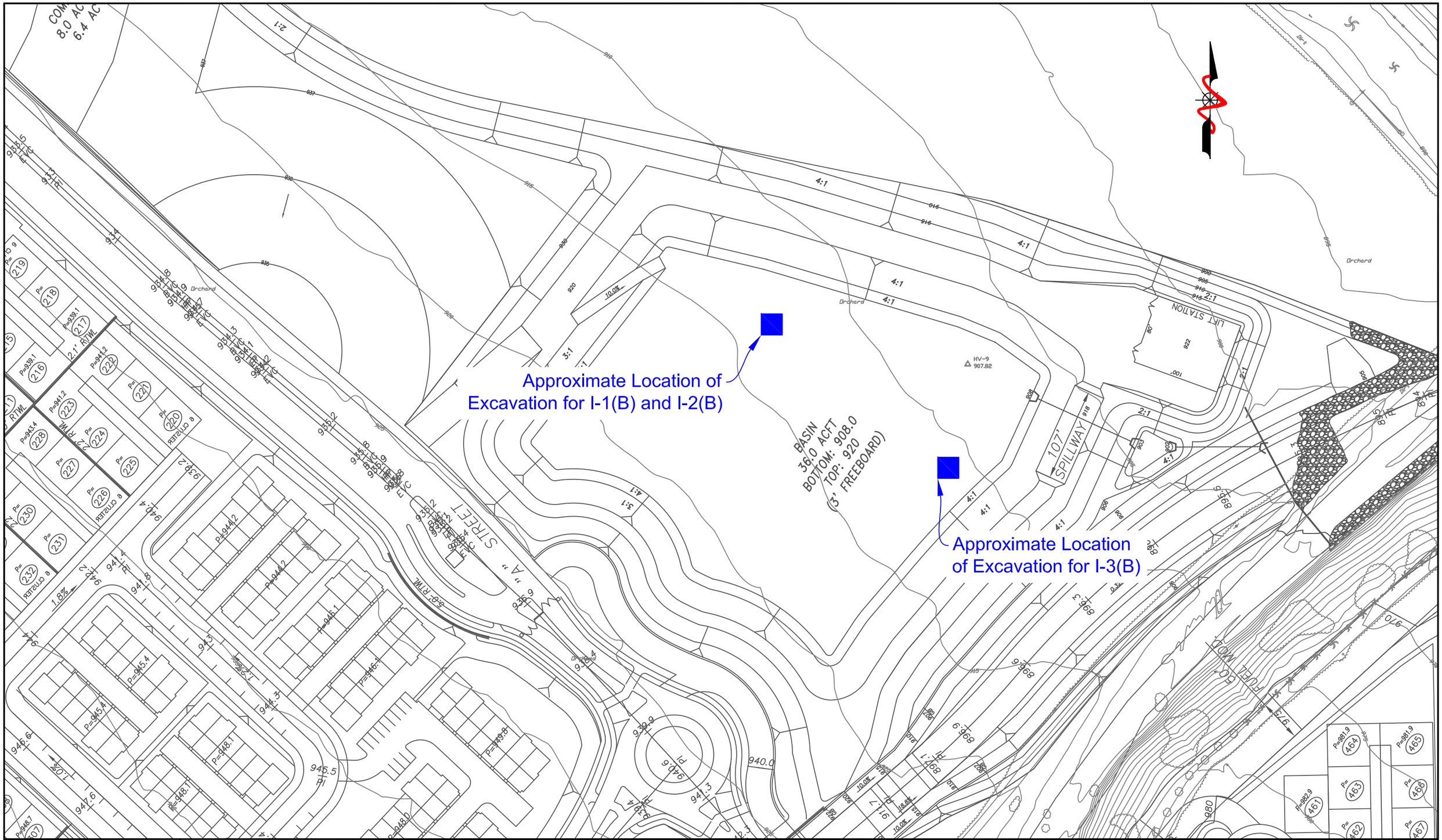
_____, 2010, Bedford Canyon Bluff Slope Failure Considerations as a Factor in the Baseline Sediment Yield and Transport Study, Arantine Hills Master Planned Community, City of Corona, Riverside County, California, Project No. 31558.92, dated March 9, 2010.



LGC Geotechnical, Inc.

FIGURE 1
Site Location Map

PROJECT NAME	Arantine Hills
PROJECT NO.	13208-01
ENG. / GEOL.	TJL / KAD
SCALE	1" = 2,000'
DATE	January 2016



LGC Geotechnical, Inc.
131 Calle Iglesia, Ste. 200
San Clemente, CA 92672
TEL (949) 369-6141 FAX (949) 369-6142

Figure 2 - Infiltration Testing Location Map

PROJECT NAME	Arantine Hills
PROJECT NO.	13208-01
ENG. / GEOL.	TJL / KAD
SCALE	1" = 100'
DATE	January 2016

Infiltration Test Data Sheet

LGC Geotechnical, Inc
131 Calle Iglesia Suite 200, San Clemente, CA 92672 tel. (949) 369-6141

Project Name: Arantine Hills
Project Number: 13208-01
Date: 1/21/2016
Boring Number: I-1(B)

Test hole dimensions (if circular)	
Boring Depth (feet)*:	2
Boring Diameter (inches):	9
Pipe Diameter (inches):	-

*measured at time of test

Test pit dimensions (if rectangular)	
Pit Depth (feet):	
Pit Length (feet):	
Pit Breadth (feet):	

*Pre-Test (Sandy Soil Criteria)**

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval (min)	Initial Depth to Water (feet)	Final Depth to Water (feet)	Total Change in Water Level (feet)	Greater Than or Equal to 0.5 feet (yes/no)
1	7:36	8:01	25.0	0.95	1.56	0.61	YES
2	8:03	8:28	25.0	0.88	1.54	0.66	YES

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight, and then obtain at least twelve measurements per hole over at least six hours (approximately 30 minute intervals) with a precision of at least 0.25 inches

Main Test Data

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval, Δt (min)	Initial Depth to Water, D_o (feet)	Final Depth to Water, D_f (feet)	Change in Water Level, ΔD (feet)	Tested Infiltration Rate (in/hr)
1	8:27	8:37	10.0	0.88	1.37	0.49	6.2
2	8:38	8:48	10.0	0.80	1.40	0.6	7.4
3	8:49	8:59	10.0	0.90	1.38	0.48	6.2
4	9:00	9:10	10.0	0.83	1.39	0.56	7.0
5	9:11	9:21	10.0	0.85	1.41	0.56	7.1
6	9:23	9:33	10.0	0.84	1.42	0.58	7.4
7							
8							
9							
10							
11							
12							
						Tested Infiltration Rate (not including a factor of safety)	**7.4**

Sketch:

Notes:

LGC Geotechnical, Inc.

Infiltration Test Data Sheet

LGC Geotechnical, Inc
131 Calle Iglesia Suite 200, San Clemente, CA 92672 tel. (949) 369-6141

Project Name: Arantine Hills
Project Number: 13208-01
Date: 1/21/2016
Boring Number: I-2(B)

Test hole dimensions (if circular)	
Boring Depth (feet)*:	2.5
Boring Diameter (inches):	10
Pipe Diameter (inches):	-

*measured at time of test

Test pit dimensions (if rectangular)	
Pit Depth (feet):	
Pit Length (feet):	
Pit Breadth (feet):	

*Pre-Test (Sandy Soil Criteria)**

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval (min)	Initial Depth to Water (feet)	Final Depth to Water (feet)	Total Change in Water Level (feet)	Greater Than or Equal to 0.5 feet (yes/no)
1	7:40	8:05	25.0	0.80	2.50	1.7	YES
2	8:10	8:35	25.0	0.95	2.50	1.55	YES

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight, and then obtain at least twelve

Main Test Data

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval, Δt (min)	Initial Depth to Water, D_o (feet)	Final Depth to Water, D_f (feet)	Change in Water Level, ΔD (feet)	Tested Infiltration Rate (in/hr)
1	10:30	10:40	10.0	1.55	2.50	0.95	20.9
2	10:41	10:44	3.0	1.40	2.02	0.62	31.1
3	10:45	10:48	3.0	1.37	2.00	0.63	30.8
4	10:49	10:52	3.0	1.40	1.97	0.57	27.9
5	10:54	10:57	3.0	1.39	2.01	0.62	30.7
6	10:59	11:02	3.0	1.44	1.99	0.55	27.7
7							
8							
9							
10							
11							
12							
						Tested Infiltration Rate (not including a factor of safety)	**27.7**

Sketch:

Notes:
All Water Swept Away During Pre-Test. Adjusted Observation Time in Order to Achieve More Accurate Rates. All Water Sweeps Away in Under 10 Minutes.

LGC Geotechnical, Inc.

Infiltration Test Data Sheet

LGC Geotechnical, Inc
131 Calle Iglesia Suite 200, San Clemente, CA 92672 tel. (949) 369-6141

Project Name: Arantine Hills
Project Number: 13208-01
Date: 1/21/2016
Boring Number: I-3(B)

Test hole dimensions (if circular)	
Boring Depth (feet)*:	1.8
Boring Diameter (inches):	12
Pipe Diameter (inches):	-

*measured at time of test

Test pit dimensions (if rectangular)	
Pit Depth (feet):	
Pit Length (feet):	
Pit Breadth (feet):	

*Pre-Test (Sandy Soil Criteria)**

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval (min)	Initial Depth to Water (feet)	Final Depth to Water (feet)	Total Change in Water Level (feet)	Greater Than or Equal to 0.5 feet (yes/no)
1	11:05	11:30	25.0	0.30	1.80	1.5	YES
2	11:30	11:55	25.0	0.46	1.80	1.34	YES

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight, and then obtain at least twelve

Main Test Data

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval, Δt (min)	Initial Depth to Water, D_o (feet)	Final Depth to Water, D_f (feet)	Change in Water Level, ΔD (feet)	Tested Infiltration Rate (in/hr)
1	11:56	12:06	10.0	0.55	1.80	1.25	25.7
2	12:07	12:12	5.0	0.40	0.95	0.55	14.4
3	12:13	12:18	5.0	0.55	1.00	0.45	12.7
4	12:21	12:26	5.0	0.60	0.98	0.38	10.9
5	12:27	12:32	5.0	0.44	0.97	0.53	14.2
6	12:33	12:38	5.0	0.45	0.95	0.5	13.3
7	12:39	12:44	5.0	0.44	0.96	0.52	13.9
8							
9							
10							
11							
12							
					Tested Infiltration Rate (not including a factor of safety)		**13.9**

Sketch:

Notes:
All Water Swept Away During Pre-Test. Adjusted Observation Time in Order to Achieve More Accurate Rates. All Water Sweeps Away in Under 10 Minutes.

LGC Geotechnical, Inc.

July 22, 2019 Project No. 19080-01

Mr. Glen Powles
Bedford Marketplace, LLC
5780 Fleet Street, Suite 225
Carlsbad, California 92008

Subject: ***Preliminary Geotechnical Evaluation for Proposed Bedford Marketplace, Tracts 37030, 36294, and 37644, Corona, California***

In accordance with your request, LGC Geotechnical, Inc. has prepared this preliminary geotechnical evaluation report for the proposed Bedford Marketplace, Tracts 37030, 36294, and 37644, located in the City of Corona, California. This report summarizes our findings, conclusions, and preliminary recommendations with regards to the proposed development.

If you should have any questions regarding this report, please do not hesitate to contact our office. We appreciate this opportunity to be of service.

Respectfully,

LGC Geotechnical, Inc.

PROFESSIONAL GEOLOGIST
TIMOTHY LAWSON
No. 1821
CERTIFIED ENGINEERING GEOLOGIST
EXP. 2/29/20
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY LAWSON
No. 2626
GEOTECHNICAL
STATE OF CALIFORNIA

PROFESSIONAL GEOLOGIST
KEVIN DYEKMAN
No. 2595
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

Tim Lawson, CEG 1821, GE 2626
Geotechnical Engineer

Kevin Dyekman, CEG 2595
Project Geologist

KAD/TJL/amm

Distribution: (1) Addressee (electronic copy)
(3) Hunsaker & Associates (1 electronic & 2 wet-signed copies)
Attn: Paul Huddleston

TABLE OF CONTENTS

Section ***Page***

1.0 INTRODUCTION....2
1.1 Site Description....2
1.2 Background....2
1.3 Project Description....3

2.0 GEOTECHNICAL CONDITIONS....5
2.1 Regional Geology....5
2.2 Site-Specific Geology....5
2.2.1 Artificial Fill, Undocumented (Not Mapped)....5
2.2.2 Artificial Fill (Symbol - Af)....5
2.2.3 Quaternary Alluvium Deposits (Symbol - Qal)....6
2.3 Groundwater....6
2.4 Seismic Design Criteria....6
2.5 Faulting and Seismic Hazards....7
2.5.1 Liquefaction and Dynamic Settlement....8
2.5.2 Lateral Spreading....8
2.6 Landslides....9
2.7 Expansion Potential....9
2.8 Oversized Material....9
2.9 Rippability....9

3.0 CONCLUSIONS....10

4.0 RECOMMENDATIONS....11
4.1 Site Earthwork....11
4.1.1 Site Preparation....11
4.1.2 Removal Depths....12
4.1.3 Over-Excavation....12
4.1.4 Removal Bottoms and Subgrade Preparation....13
4.1.5 Temporary Excavations....13
4.1.6 Material for Fill....14
4.1.7 Fill Placement and Compaction....14
4.1.8 Shrinkage and Bulking....15
4.1.9 Trench and Retaining Wall Backfill and Compaction....16
4.2 Slope Stability....16
4.2.1 Cut Slopes....16
4.2.2 Fill Slopes....17
4.2.3 Slope Maintenance Guidelines....17
4.3 Subdrains....18
4.4 Provisional Soil Bearing and Lateral Resistance....18
4.5 Lateral Earth Pressures for Retaining Walls....19
4.6 Fences and Freestanding Walls....20

TABLE OF CONTENTS (Cont'd)

4.7 Control of Surface Water and Drainage Control.....21
4.8 Geotechnical Plan Review.....22
4.9 Geotechnical Observation and Testing.....22

5.0 LIMITATIONS.....23

LIST OF TABLES, ILLUSTRATIONS, & APPENDICES

Tables

Table 1 – Seismic Design Parameters (Page 7)
Table 2 – Estimated Shrinkage (Page 15)
Table 3 – Lateral Earth Pressures- Select Onsite Backfill (Page 19)
Table 4 – Summary of Infiltration Testing (Page 21)

Figures

Figure 1 – Site Location Map (Page 4)
Figure 2 – Retaining Wall Backfill Detail (Rear of Text)

Sheets

Sheet 1 – Geotechnical Map (Rear of Text)

Appendices

Appendix A – References
Appendix B – Subsurface Data
Appendix C – Laboratory Summary from Phase 1 Grading
Appendix D –General Earthwork and Grading Specifications for Rough Grading

1.0 INTRODUCTION

1.1 Site Description

The entire Bedford development includes Tracts 37030, 36294, and 37644 and encompasses approximately 275 acres of land at the foothills of the Santa Ana Mountains near the southern boundary of the City of Corona, Riverside County, California. In general, the site is bound by the Eagle Glen Specific Plan development on the north and west, by the existing residential lots to the south, and by Interstate 15 to the east.

Ascending slopes up to approximately 90 feet in height with varying slope ratios ranging from approximately 1.25:1 to 3:1 (horizontal to vertical) are present near the northern boundary of the site. In addition, steep bluffs associated with the Bedford Canyon Wash with varying slope ratios ranging from approximately 1:1 (horizontal to vertical) to near vertical are generally located near the southern boundary of the site. In general, the site can be divided into two basic regions based on topography. The lower-lying Bedford Canyon Wash area in the central and northern portion of the site and the elevated regions above the bluffs in the southern and eastern portions of the site.

The proposed Bedford Marketplace site is located in the lower-lying Bedford Canyon Wash area at the eastern boundary of the Bedford development and includes an additional parcel owned by the Riverside County Transportation Commission (RCTC). The proposed Bedford Marketplace combines the approximately 10-acre Bedford commercial parcel with the 17.85-acre RCTC parcel resulting in an approximately 27.85-acre area for commercial development. In general, Bedford Marketplace is bound by Eagle Glen Parkway/Cajalco Road to the north, Interstate 15 to the east, a flood control channel to the south, and Bedford Canyon Road to the west (Figure 1 – Site Location Map).

1.2 Background

Recommendations regarding remedial grading for the entire Bedford development, previously known as Arantine Hills, were provided by LGC Geotechnical (2014 & 2015). These recommendations were based on mass grading and stockpile plans prepared by CASC (2014 & 2015) and preliminary rough grading plans for Phase 1 prepared by Hunsaker & Associates (2015). Rough grading of Phase 1 began in October 2016 and was essentially completed in May 2017. Subsequent postgrading and construction operations for the backbone streets including Clementine Way, Hudson House Drive, and Bedford Canyon Road have also been completed.

Remedial removals and fill placement for portions of the Bedford Marketplace area were completed as a part of the Phase 1 rough grading operations. This was performed in order to facilitate the construction of backbone utilities, roadways, a basin, and a pump station adjacent to the subject commercial site. In general, remedial removals and fill placement to near design grades were completed for the Bedford commercial area and the RCTC parcel remains undeveloped (Sheet 1 – Geotechnical Map).

1.3 Project Description

The conceptual grading plan (Hunsaker, 2019) indicates relatively shallow cuts and fills with intermediate slopes on the order of approximately 20 feet in height to achieve design grades. Based on our review of the Bedford Marketplace conceptual site plan (MCG, 2019) the development will consist of restaurant and retail buildings, a gas station, a hotel, and associated parking improvements.

The conceptual grading plan prepared by Hunsaker & Associates (2019) is utilized as the base map for our Geotechnical Map (Sheet 1). It is our understanding that the provided grading plan is preliminary and changes to design grades are anticipated. The recommendations provided herein are to be based on the ultimate rough grade design. The rough grading plan should be reviewed by this office in order to verify or adjust the geotechnical recommendations provided herein.



PROJECT NAME	Bedford Marketplace
PROJECT NO.	19080-01
ENG. / GEOL.	TJL / KAD
SCALE	Not to Scale
DATE	July 2019

LGC Geotechnical, Inc.

FIGURE 1
Site Location Map

2.0 GEOTECHNICAL CONDITIONS

2.1 Regional Geology

The subject site is located along the northeastern flank of the Santa Ana Mountains, just north of the Elsinore-Temecula basin, within the Peninsular Ranges Geomorphic Province. In this area, the Santa Ana Mountains are composed of a core of metamorphic rocks of the Bedford Canyon Formation with lesser amounts of volcanic rock. Erosion has led to a series of sub-parallel canyons travelling out of the mountains. The material eroded from the mountains has formed a series of coalescing older alluvial fans, also referred to as older alluvial deposits. Subsequently these older fan deposits have been eroded by a series of younger drainage courses. The subject site is located in one of these younger drainages known as the "Bedford Canyon Wash". Additionally, the Elsinore Fault Zone located at the base of the eastern flank of the Santa Ana Mountains is considered a major active fault zone and is regionally part of the San Andreas Fault system. The San Andreas Fault system distributes right-lateral movement across the North American and Pacific Plates.

2.2 Site-Specific Geology

The majority of the site is located on alluvial deposits of the Bedford Canyon Wash with isolated zones of undocumented artificial fill associated with existing dirt roads from previous site operations. Some areas within the Bedford Marketplace commercial area have been subject to remedial grading resulting in the presence of compacted artificial fill.

2.2.1 Artificial Fill, Undocumented (Not Mapped)

Undocumented fill soils were encountered in localized areas within the subject site. These fill soils are presumed to be related to agricultural activities and the grading of dirt roads throughout the site. Undocumented fill is considered to have variable lateral extents and is anticipated to only extend approximately 2 feet below the existing ground surface. Undocumented fill soils were not mapped.

2.2.2 Artificial Fill (Symbol - Af)

Phase 1 rough grading operations included remedial removals and fill placement to near design grades within the Bedford commercial parcel. As a result, compacted artificial fill is present adjacent to Bedford Canyon Road and the existing detention basin. These fill materials were derived from onsite alluvial soils and consist of a mixture of gravel, sand, and minor amounts of silt and clay. These materials were placed with geotechnical observation and testing provided by LGC Geotechnical and are considered suitable to support proposed structures and/or additional fill soils.

2.2.3 Quaternary Alluvial Deposits (Symbol – Qal)

The alluvial deposits encountered during previous subsurface exploration (Appendix A) and Phase 1 rough grading generally consisted of interbedded layers of predominately sand and gravel with varying amounts of silt, cobbles and minor amounts of clay. Apparent density of these materials generally ranged from medium dense to very dense, increasing in depth. The alluvial deposits are present in the area of the RCTC parcel and are underlying the previously placed artificial fill (Af).

2.3 Groundwater

Groundwater and/or seepage was not encountered during rough grading of Phase 1 or during previous subsurface eploration (Appendix A). Groundwater is not considered to be an issue during site grading and development.

Seasonal fluctuations of groundwater elevations should be expected over time. In general, groundwater levels fluctuate with the seasons and local zones of perched groundwater may be present due to local seepage caused by irrigation and/or recent precipitation. Local perched groundwater conditions or surface seepage may develop once site development is completed.

2.4 Seismic Design Criteria

The site seismic characteristics were evaluated per the guidelines set forth in Chapter 16, Section 1613 of the 2016 California Building Code (CBC). Representative site coordinates of latitude 33.8191 degrees north and longitude -117.5199 degrees west were utilized in our analyses. Please note that these coordinates are considered representative of the site for preliminary planning purposes. The maximum considered earthquake (MCE) spectral response accelerations (S_{MS} and S_{M1}) and adjusted design spectral response acceleration parameters (S_{DS} and S_{D1}) for Site Class D are provided in Table 1 on the following page.

TABLE 1

Seismic Design Parameters

Selected Parameters from 2016 CBC, Section 1613 - Earthquake Loads	Seismic Design Values
Site Class per Chapter 20 of ASCE 7	D
Risk-Targeted Spectral Acceleration for Short Periods (S_S)*	2.352g
Risk-Targeted Spectral Accelerations for 1-Second Periods (S_1)*	0.918g
Site Coefficient F_a per Table 1613.3.3(1)	1.0
Site Coefficient F_v per Table 1613.3.3(2)	1.5
Site Modified Spectral Acceleration for Short Periods (S_{MS}) for Site Class D [Note: $S_{MS} = F_aS_S$]	2.352
Site Modified Spectral Acceleration for 1-Second Periods (S_{M1}) for Site Class D [Note: $S_{M1} = F_vS_1$]	1.378g
Design Spectral Acceleration for Short Periods (S_{DS}) for Site Class D [Note: $S_{DS} = (^2/_3)S_{MS}$]	1.568g
Design Spectral Acceleration for 1-Second Periods (S_{D1}) for Site Class D [Note: $S_{D1} = (^2/_3)S_{M1}$]	0.918g
Mapped Risk Coefficient at 0.2 sec Spectral Response Period, C_{RS} (per ASCE 7)	0.948
Mapped Risk Coefficient at 1 sec Spectral Response Period, C_{R1} (per ASCE 7)	0.937

* From SEAOC, 2018

Section 1803.5.12 of the 2016 CBC (per Section 11.8.3 of ASCE 7) states that the maximum considered earthquake geometric mean (MCE_G) Peak Ground Acceleration (PGA) should be used for liquefaction potential. The PGA_M for the site is equal to 0.892g.

2.5 Faulting and Seismic Hazards

The subject site is not located within a State of California Earthquake Fault Zone (i.e., Alquist-Priolo Earthquake Fault Act Zone) and no active faults are known to cross the site (CDMG, 2000). A fault is considered "active" if evidence of surface rupture in Holocene time (the last approximately 11,650 years) is present. The possibility of damage due to ground rupture is considered low since no active faults are known to cross the site.

Secondary effects of seismic shaking resulting from large earthquakes on the major faults in the Southern California region, which may affect the site, include ground lurching and shallow ground rupture, soil liquefaction, and dynamic settlement. These secondary effects of seismic shaking are a possibility throughout the Southern California region and are dependent on the distance between the site and causative fault and the onsite geology. The closest major active faults that could produce these secondary effects include the Elsinore, San Jacinto, and San Andreas Faults, among others. A discussion of theses secondary effects is provided in the following sections.

2.5.1 Liquefaction and Dynamic Settlement

Liquefaction is a seismic phenomenon in which loose, saturated, granular soils behave similarly to a fluid when subject to high-intensity ground shaking. Liquefaction occurs when three general conditions coexist: 1) shallow groundwater; 2) low density non-cohesive (granular) soils; and 3) high-intensity ground motion. Studies indicate that loose, saturated, near-surface, cohesionless soils exhibit the highest liquefaction potential, while dry, dense, cohesionless soils, and cohesive soils exhibit low to negligible liquefaction potential. In general, cohesive soils are not considered susceptible to liquefaction. Effects of liquefaction on level ground include settlement, sand boils, and bearing capacity failures below structures. Furthermore, dynamic settlement of dry sands can occur as the sand particles tend to settle and densify as a result of a seismic event.

Based on the lack of shallow groundwater (greater than 65 feet below ground surface) and anticipated geotechnical conditions subsequent to rough grading (compacted artificial fill overlying dense alluvial deposits) the potential for liquefaction to impact the site is considered very low.

2.5.2 Lateral Spreading

Lateral spreading is a type of liquefaction induced ground failure associated with the lateral displacement of surficial blocks of sediment resulting from liquefaction in a subsurface layer. Once liquefaction transforms the subsurface layer into a fluid mass, gravity plus the earthquake inertial forces may cause the mass to move downslope towards a free face (such as a river channel or an embankment). Lateral spreading may cause large horizontal displacements and such movement typically damages pipelines, utilities, bridges, and structures.

Due to the low potential for liquefaction, the potential for lateral spreading is considered very low.

2.6 Landslides

Review of readily available geologic resources and field observations of the surficial conditions do not indicate the presence of landslides on the site or in the immediate vicinity. In general, the site consists of relatively flat-lying alluvial deposits which are not considered susceptible to landslides, seismically-induced landslides, or other mass wasting processes (debris flows, rockfalls, etc.).

2.7 Expansion Potential

Based on the results of previous laboratory testing, site soils are anticipated to have a "Very Low" to "Medium" expansion potential. Final expansion potential of site soils should be determined at the completion of grading. Results of expansion potential testing at finish grades will be utilized to confirm final foundation design.

2.8 Oversized Material

Minor amounts of oversized material (material larger than 12 inches in maximum dimension) were encountered during previous subsurface exploration (Appendix A) and Phase 1 rough grading operations. Recommendations for the appropriate handling of oversized material are provided in our General Earthwork & Grading Specifications for Rough Grading (Appendix D).

2.9 Rippability

In general, the undocumented fill, artificial fill, and Quaternary Alluvial soils are anticipated to be rippable with heavy equipment (Caterpillar D-9 or equivalent).

3.0 CONCLUSIONS

Based on the results of our knowledge of the subject site, it is our opinion that the proposed improvements are feasible from a geotechnical standpoint, provided that the recommendations contained in the following sections are incorporated during site grading and development. A summary of our geotechnical conclusions are as follows:

- The near-surface onsite soils are not considered suitable for support of the planned development and will need to be removed and replaced with compacted fill materials. Removal recommendations are provided below in Section 4.1.
- Artificial fill soils placed with geotechnical observation and testing provided by LGC Geotechnical and are considered suitable to support proposed structures and/or additional fill soils. Minor reprocessing recommendations for these soils are provided below in Section 4.1.
- Groundwater and/or seepage was not encountered during rough grading of Phase 1 or during previous subsurface evaluations (Appendix A). Groundwater is not considered to be an issue during site grading and development.
- The subject site is not located within a State of California Earthquake Fault Zone (i.e., Alquist-Priolo Earthquake Fault Act Zone) and no active faults are known to cross the site (CDMG, 2000). Therefore, the possibility of damage due to ground rupture is considered low.
- The main seismic hazard that may affect the site is ground shaking from one of the active regional faults. The subject site will likely experience strong seismic ground shaking during its design life.
- Based on the lack of shallow groundwater (greater than 65 feet below ground surface) and geotechnical conditions subsequent to rough grading (compacted artificial fill overlying dense alluvium) the potential for liquefaction to impact the site is considered very low.
- Review of readily available geologic resources and field observations of the surficial conditions do not indicate the presence of landslides on the site or in the immediate vicinity. Topographically, the site is relatively flat-lying and is not considered susceptible to landslides, seismically-induced landslides, or other mass wasting processes (debris flows, rock falls, etc.).
- Based on the results of laboratory testing, site soils are anticipated to have “Very Low” to “Medium” expansion potential. Final design expansion potential must be determined at the completion of grading operations.
- In general, the undocumented fill, artificial fill, and Quaternary Alluvial soils are anticipated to be rippable with heavy equipment (Caterpillar D-9 or equivalent).
- We anticipate that the onsite soils generated from excavations will be generally suitable for re-use as compacted fill, provided they are relatively free of rocks larger than 12 inches in maximum dimension, construction debris, and significant organic material.
- It is our understanding that the conceptual grading plan (Hunsaker, 2019) is preliminary and changes to design grades are anticipated. The rough grading plan should be reviewed by this office in order to verify or adjust the geotechnical recommendations provided herein.
- Proposed slopes are to be constructed in accordance with recommendations provided herein. Subsequent to construction, the proposed slopes are anticipated to be both grossly and surficially stable.

4.0 RECOMMENDATIONS

The following recommendations are to be considered preliminary and should be confirmed upon completion of grading and earthwork operations. In addition, they should be considered minimal from a geotechnical viewpoint, as there may be more restrictive requirements from the architect, structural engineer, building codes, governing agencies, or the owner.

It should be noted that the following geotechnical recommendations are intended to provide sufficient information to develop the site in general accordance with the 2016 CBC requirements. With regard to the possible occurrence of potentially catastrophic geotechnical hazards such as fault rupture, earthquake-induced landslides, liquefaction, etc. the following geotechnical recommendations should provide adequate protection for the proposed development to the extent required to reduce seismic risk to an "acceptable level." The "acceptable level" of risk is defined by the California Code of Regulations as "that level that provides reasonable protection of the public safety, though it does not necessarily ensure continued structural integrity and functionality of the project" [Section 3721(a)]. Therefore, repair and remedial work of the proposed improvement may be required after a significant seismic event. With regards to the potential for less significant geologic hazards to the proposed development, the recommendations contained herein are intended as a reasonable protection against the potential damaging effects of geotechnical phenomena such as expansive soils, fill settlement, groundwater seepage, etc. It should be understood, however, that our recommendations are intended to maintain the structural integrity of the proposed development and structures given the site geotechnical conditions but cannot preclude the potential for some cosmetic distress or nuisance issues to develop as a result of the site geotechnical conditions.

The geotechnical recommendations contained herein must be confirmed to be suitable or modified based on the actual as-graded conditions.

4.1 Site Earthwork

Rough grading is anticipated to include remedial earthwork, excavation of cut areas, and placement of compacted fill to design grades. We recommend that earthwork onsite be performed in accordance with the following recommendations, the 2016 CBC/City of Corona requirements, and the General Earthwork and Grading Specifications for Rough Grading included in Appendix D. In case of conflict, the following recommendations shall supersede those included in Appendix D.

4.1.1 Site Preparation

Prior to the grading of areas to receive structural fill or engineered structures, these areas should be cleared of surface obstructions and unsuitable material (such as undocumented fill, colluvium, and topsoil). Vegetation and debris should be removed and properly disposed of offsite. Holes resulting from the removal of buried obstructions, which extend below proposed removal bottoms, should be replaced with suitable compacted fill material.

4.1.2 Removal Depths

All unsuitable and potentially compressible materials not removed by design cuts should be excavated to competent materials and replaced with compacted fill soils. In general, this includes all existing undocumented artificial fill, residual soil, and upper portions of the previously placed compacted fill and alluvial deposits. Removals specific to the differing types of soils are summarized below.

Previously Placed Artificial Fill: Portions of the Bedford Marketplace area were partially graded during Phase 1 rough grading operations in order to facilitate the construction of the backbone roadways and improvements. LGC Geotechnical provided observation and testing services during the Phase 1 rough grading operations. Removal bottoms achieved during Phase 1 grading were observed and accepted prior to the placement of compacted fill soils. The previously placed compacted fill (Map Symbol – Af) are considered suitable to support proposed structures and/or additional fill placement. It is recommended that the upper 1-foot of the previously placed fill soils be removed and replaced with compacted fill soils in order to remove any weathered or desiccated materials.

Alluvial Deposits: Alluvial deposits (Map Symbol – Qal) are generally located in the area of the RCTC parcel in the eastern portion of the subject site. It is anticipated that the upper approximately 5 feet of the alluvial deposits will be loose, weathered, and/or desiccated and should be removed and replaced with compacted artificial fill soils.

In general, removal depths are estimated to range between approximately 1 to 5 feet below existing grade as outline above. Estimated removal depths are depicted on the Geotechnical Map (Sheet 1). Localized areas of deeper removals should be anticipated during grading. Removal bottoms should be extended laterally in order to support a 1:1 (horizontal to vertical) projection away from proposed structures or improvements. The actual depths and lateral extents of removals will be determined by the geotechnical consultant during grading based on the actual subsurface conditions encountered.

Several methods will be utilized in determining the suitability of the material observed in the removal bottom excavations. Observation of material, proof rolling, probing, and occasional field density testing of the removal bottoms shall be performed by a field technician and/or field geologist to verify removal bottom suitability. When field density test data is utilized for the approval of a removal bottom, an in-place relative compaction of 85 percent or greater and/or a degree of saturation of 85 percent or greater will be considered suitable.

4.1.3 Over-Excavation

In order to provide a uniform fill blanket beneath proposed structures, it is recommended that design cut and cut/fill transition pads be over-excavated a minimum of 3 feet below ultimate finish pad grade based on the future rough grading design. A maximum 3:1 differential fill thickness underneath individual lots should be maintained in order to

reduce the potential for future differential settlement. Over-excavation should extend laterally a minimum of 5 feet beyond proposed building footprints.

Streets in design cut areas should be over-excavated a minimum of 2 feet below design subgrade elevations. In addition, retaining wall footings located on cut or a cut/fill transition should be over-excavated a minimum of 2 feet below and 2 feet beyond the edges of the proposed footings.

It is our opinion that utility excavations may be completed utilizing typical heavy machinery. The native soils at the site are generally uncemented alluvial soils (Class "C" per Cal OSHA) and are anticipated to be unstable when excavated vertically, see Section 4.1.5. At the owner's discretion the streets could be overexcavated, such that utility trenches will then be excavated through compacted fill soils. If desired, it is recommended that the street overexcavation extend approximately 2-foot below the lowest utility.

Over-excavations/undercuts must be confirmed and mapped by the geotechnical consultant prior to subsequent fill placement. The actual depth and lateral extents of over-excavation should be determined by the geotechnical consultant during grading based on the actual subsurface conditions encountered. Please note that some estimated removals in the western portion of the site may extend deeper than the recommended over-excavation in order to remove unsuitable materials.

4.1.4 Removal Bottoms and Subgrade Preparation

In general, removal bottoms, over-excavation bottoms, and areas to receive compacted fill should be scarified to a minimum depth of 6 to 8 inches, brought to a near-optimum moisture condition (generally within optimum and 2 percent above optimum moisture content) and re-compacted per project requirements.

Removal bottoms, over-excavation/undercut bottoms, and areas to receive fill should be observed and accepted by the geotechnical consultant prior to fill placement.

4.1.5 Temporary Excavations

Temporary excavations should be performed in accordance with project plans, specifications, and applicable Occupational Safety and Health Administration (OSHA) requirements. Excavations should be laid back or shored in accordance with OSHA requirements before personnel or equipment are allowed to enter. The majority of site alluvial soils are anticipated to be OSHA Type "C" soils. Soil conditions should be regularly evaluated during construction to verify conditions are as anticipated. The contractor shall be responsible for providing the "competent person" required by OSHA standards to evaluate the soil conditions. Close coordination with the geotechnical consultant should be maintained to facilitate construction while providing safe excavations. Excavation safety is the sole responsibility of the contractor.

Vehicular traffic, stockpiles, and equipment storage should be set back from the perimeter

of excavations a minimum distance equivalent to a 1:1 projection from the bottom of the excavation or 5 feet, whichever is greater. Once an excavation has been initiated, it should be backfilled as soon as practical. Prolonged exposure of temporary excavations may result in some localized instability. Excavations should be planned so that they are not initiated without sufficient time to shore/fill them prior to weekends, holidays, or forecasted rain.

4.1.6 Material for Fill

From a geotechnical perspective, the onsite soils are generally considered suitable for use as general compacted fill, provided they are screened of construction debris, any oversized material (12 inches in greatest dimension), and significant organic content. From a geotechnical perspective, compacted fill with an average organic content less than 2 percent is generally not considered significant. Any oversized material (greater than 12 inches in maximum dimension) encountered must be appropriately handled as outlined in Appendix D.

From a geotechnical viewpoint, any required import soils (excluding retaining wall backfill import) should consist of clean, relatively granular soils of Low expansion potential (expansion index 50 or less based on ASTM D4829) and no particles larger than 3 inches in greatest dimension. Source samples of planned importation should be provided to the geotechnical consultant for laboratory testing a minimum of 10 working days prior to any planned importation.

Retaining wall backfill should consist of sandy soils with a maximum of 35 percent fines (passing the No. 200 sieve) per American Society for Testing and Materials (ASTM) Test Method D1140 (or ASTM D6913/D422) and a Very Low expansion potential (EI of 20 or less per ASTM D4829). Soils should also be screened of organic materials, construction debris, and any material greater than 3 inches in maximum dimension. Portions of the onsite soil may not be suitable for retaining wall backfill due to their fines content (i.e., silt and clay content) and expansion potential. Therefore, either select grading and stockpiling and/or import of suitable soils meeting the criteria outlined above will be required.

Aggregate base should conform to the requirements of Section 200-2 of the Standard Specifications for Public Works Construction ("Greenbook") for untreated base materials, Caltrans Class 2 aggregate base and/or the County of Riverside requirements.

4.1.7 Fill Placement and Compaction

Material to be placed as fill should be brought to near optimum moisture content (generally within optimum and 2 percent above optimum moisture content) and compacted to at least 90 percent relative compaction (per ASTM D1557). Moisture conditioning of site soils will be required in order to achieve adequate compaction. Due to the granular nature of the site soils, pre-watering the site prior to grading may be beneficial. The optimum lift thickness to produce a uniformly compacted fill will depend

on the type and size of compaction equipment used. In general, fill should be placed in uniform lifts not exceeding 8 inches in compacted thickness. Each lift should be thoroughly compacted and accepted prior to subsequent lifts. Generally, placement and compaction of fill should be performed in accordance with local grading ordinances with observation and testing performed by the geotechnical consultant.

Fill placed on any slopes greater than 5:1 (horizontal to vertical) inclination should be properly keyed and benched into firm and competent soils as it is placed in lifts. During backfill of temporary excavations, fill should be properly benched into firm and competent soils as it is placed in lifts and compacted.

Slope face compaction must be achieved by the contractor by overfilling the slope face a minimum of 2 feet and cutting back to design finish grades or by other acceptable methods.

Aggregate base material should be compacted to a minimum of 95 percent relative compaction at or slightly above optimum moisture content per ASTM D1557. Subgrade below aggregate base should be compacted to a minimum of 90 percent relative compaction at or slightly above optimum moisture content per ASTM D1557.

4.1.8 Shrinkage and Bulking

Volumetric changes in earth quantities will occur when excavated onsite earth materials are replaced as properly compacted fill. The following is an estimate of shrinkage factors for the various geologic units found onsite. These estimates are based on in-place densities of the various materials and on the estimated average degree of relative compaction that will be achieved during grading.

TABLE 2

Estimated Shrinkage

Soil Type	Allowance	Estimated Range
Artificial Fill (Af)	Shrinkage/Bulk	+/- 5%
Alluvial Deposits (Qal) – Upper 4 Feet	Shrinkage	10 to 15%
Alluvial Deposits (Qal) – Below 4 Feet	Shrinkage	0 to 10%

Subsidence due to earthwork equipment is expected to be on the order of 0.1-foot. It should be stressed that these values are only estimates and that actual shrinkage factors are extremely difficult to predict. The effective shrinkage of onsite soils will depend primarily on the type of compaction equipment and method of compaction used onsite by the contractor. The above shrinkage estimates are intended as an aid for others in determining preliminary earthwork quantities. However, these estimates should be used

with some caution since they are not absolute values.

If importing/exporting a large volume of soils is not considered feasible or economical, we recommend a balance area be designated onsite that can fluctuate up or down based on the actual volume of soil. We recommend a "balance" area that can accommodate on the order of 5 to 10 percent (plus or minus) of the total grading volume be considered.

Volumetric changes based on quantities from previous grading activities (Phase 1, Channel, etc.) should also be reviewed and taken into consideration.

4.1.9 Trench and Retaining Wall Backfill and Compaction

The onsite soils may generally be suitable as trench backfill, provided the soils are screened of rocks and other material greater than 6 inches in diameter and organic matter. If trenches are shallow or the use of conventional equipment may result in damage to the utilities, sand having a sand equivalent (SE) of 30 or greater (per California Test Method [CTM] 217) may be used to bed and shade the pipes. Sand backfill within the pipe bedding zone may be densified by jetting or flooding and then tamped to ensure adequate compaction. Subsequent trench backfill should be compacted in uniform thin lifts by mechanical means to at least a minimum 90 percent relative compaction (per ASTM D1557). It is our understanding that the upper 3 feet of trench backfill below proposed street subgrade is to be compacted to a minimum 95-percent relative compaction in accordance with requirements set forth by the City of Corona.

Retaining wall backfill should consist of sandy soils as outlined in the preceding Section 4.1.6. The limits of select sandy backfill should extend at minimum ½ the height of the retaining wall or the width of the heel (if applicable), whichever is greater, refer to Figure 2 (rear of text). Retaining wall backfill soils should be compacted in relatively uniform thin lifts to at least 90 percent relative compaction (per ASTM D1557). Jetting or flooding of retaining wall backfill materials should not be permitted.

A representative from LGC Geotechnical should observe and test the backfill to verify compliance with the project recommendations.

4.2 Slope Stability

4.2.1 Cut Slopes

Stabilization fills should be constructed on proposed cut slopes over 5 feet in height in accordance with the detail provided in Appendix D. Keyway widths should be a minimum of 15 feet wide. Keyways should be a minimum of 2 feet deep, determined from the lowest toe-of-slope elevation, and tilted back towards the heel a minimum 2 percent or 1-foot (whichever is greater).

Stabilization fill backcuts should be excavated so that at least a minimum 15-foot fill width

is maintained for the entire height of the stability fill slope. In general, backcuts should be excavated at a maximum 1.5:1 (horizontal to vertical) inclination. Properly outletted back drains should be constructed along stabilization fill backcuts in accordance with the General Earthwork and Grading Specifications for Rough Grading included in Appendix D. Flatter backcut inclinations may be required based on observed conditions during grading. The backcuts should not be initiated prior to forecasted rain or be left open for extended periods of time.

Backcuts and keyway excavations must be geologically mapped by the geotechnical consultant during excavation to confirm the anticipated conditions. If adverse conditions are exposed, additional analysis and/or remediation measures may be required. The grading contractor must trim the backcuts with a slope board to remove loose material to allow for confirmational mapping. Updated and/or revised geotechnical recommendations may be required based on observed conditions.

4.2.2 Fill Slopes

Design fill slopes depicted on the grading study (Hunsaker, 2019) are anticipated to be both grossly and surficially stable as designed provided they are constructed in accordance with the General Earthwork and Grading Specifications for Rough Grading included in Appendix D and properly maintained subsequent to construction (Section 4.2.3). Fill slopes should be constructed with a maximum slope ratio of 2:1 (horizontal to vertical). Slope faces should also be compacted to project recommendations. To improve surficial stability, vegetation specified by the landscape architect should be established on the slope face as soon as it is practical.

4.2.3 Slope Maintenance Guidelines

It is recommended that any graded slopes be planted with groundcover vegetation as soon as practical to protect against erosion by reducing runoff velocity. Deep-rooted vegetation that requires little water and is able to survive local climate conditions should also be established to protect against surficial slumping. Under no circumstances should slopes be allowed to be bare of vegetation. Landscape vegetation must not be "trimmed" to root structures leaving no protection of the slopes. Irrigation levels should be kept to the minimum level necessary to establish healthy plant growth. Slopes must not be overwatered. If automatic sprinklers are used, they must be adjusted during periods of rainfall. A landscape professional must be consulted for landscape recommendations.

A program for the elimination of burrowing animals in both native and graded slope areas must be established to protect slope stability by reducing the potential for surface water to penetrate into the slope face. Continuous erosion control, rodent control, and maintenance are essential to the long-term stability of all slopes. Trenches excavated on a slope face for utility or irrigation lines and/or for any purpose must be properly backfilled and compacted to project recommendations to the slope face. Observation/testing and acceptance by the geotechnical consultant during trench

backfill are recommended. V-ditches should be inspected and cleared of loose soil and/or debris on a routine basis, especially prior to and during the rainy season.

4.3 Subdrains

If unanticipated groundwater or areas of potential future groundwater seepage and/or accumulation are encountered during grading subdrain systems may be recommended by the geotechnical consultant. Subdrains are to be properly outletted and connected to a suitable discharge point.

A representative of the project civil engineer should survey the installed subdrains for alignment and grade prior to fill placement above the subdrains. The location and elevations of subdrains and subdrain outlets should be recorded on as-built plans and made available to future homeowners and/or homeowner associations. It is the responsibility of the contractor to locate and protect subdrain outlets prior to the completion of work.

4.4 Provisional Soil Bearing and Lateral Resistance

An allowable soil bearing pressure of 2,000 pounds per square foot (psf) may be used for the design of footings having a minimum width of 12 inches and a minimum embedment of 24 inches below lowest adjacent ground surface. This value may be increased by 300 psf for each additional foot of embedment or 100 psf for each additional foot of foundation width to a maximum value of 2,500 psf. In addition, an allowable soil bearing pressure of 1,200 psf may be used for a mat post-tensioned slab a minimum of 6 inches below lowest adjacent grade. These allowable bearing pressures are applicable for level (ground slope equal to or flatter than 5H:1V) conditions only. Bearing values indicated are for total dead loads and frequently applied live loads and may be increased by ⅓ for short duration loading (i.e., wind or seismic loads). These values are presented under the assumption that the soils surrounding the foundation will remain intact. For shallow foundations with less than approximately 24 inches of embedment, we recommend that homeowners be advised not to excavate adjacent to their foundations. In addition, shallow foundations with less than approximately 24 inches of embedment have a greater potential of moisture migrating beneath the slab from outside sources.

In utilizing the above-mentioned allowable bearing capacity and provided our earthwork recommendations are implemented, total foundation settlement due to soil and structural loads is anticipated to be on the order of 2 inches. Differential settlement may be taken as half of the total settlement (i.e., 1-inch over a horizontal span of 40 feet).

Resistance to lateral loads can be provided by friction acting at the base of foundations and by passive earth pressure. For concrete/soil frictional resistance, an allowable coefficient of friction of 0.35 may be assumed with dead-load forces. An allowable passive lateral earth pressure of 300 psf per foot of depth (or pcf) to a maximum of 2,500 psf may be used for the sides of footings poured against properly compacted fill. This passive pressure is applicable for level (ground slope equal to or flatter than 5H:1V) conditions only. The passive pressure may be increased by one-third due to wind or seismic forces. We recommend that the upper foot of passive resistance be neglected if finished grade will not be covered with concrete or asphalt. Frictional resistance and passive pressure may be used in combination without reduction. The

provided allowable passive pressures are based on a factor of safety of 1.5 and may be increased by one-third for short duration seismic loading conditions.

4.5 Lateral Earth Pressures for Retaining Walls

Based on our review, retaining walls up to approximately 8 feet in height are planned for the subject site. Lateral earth pressures are provided as equivalent fluid unit weights, in pounds per square foot (psf) per foot of depth or pcf. These values do not contain an appreciable factor of safety, so the retaining wall designer should apply the applicable factors of safety and/or load factors during design. A soil unit weight of 130 pcf may be assumed for calculating the actual weight of soil over the wall footing.

The following lateral pressures presented on Table 3 are for approved onsite soils with a maximum of 35 percent fines (passing the No. 200 sieve) per American Society for Testing and Materials (ASTM) Test Method D1140 (or ASTM D6913/D422) and a Very Low expansion potential (EI of 20 or less per ASTM D4829). The retaining wall designer should clearly indicate on the retaining wall plans that the backfill material is to be approved onsite soils.

TABLE 3

Lateral Earth Pressures – Select Onsite Backfill

Condition	**Equivalent Fluid Weight (pcf)**	**Equivalent Fluid Weight (pcf)**
	Level Backfill	**2:1 Sloping Backfill**
	Approved Backfill Material	**Approved Backfill Material**
Active	40	60
At-Rest	60	93

If the wall can yield enough to mobilize the full shear strength of the soil, it can be designed for "active" pressure. If the wall cannot yield under the applied load, the earth pressure will be higher. This would include 90-degree corners of retaining walls. Such walls should be designed for "at-rest." The equivalent fluid pressure values assume free-draining conditions. If conditions other than those assumed above are anticipated, the equivalent fluid pressure values should be provided on an individual-case basis by the geotechnical engineer. We recommend retaining walls be provided with construction joints in order to mitigate cosmetic distress from wall movement.

Surcharge loading effects from any adjacent structures should be evaluated by the retaining wall designer. In general, structural loads within a 1:1 (horizontal to vertical) upward projection from the bottom of the proposed retaining wall footing will surcharge the proposed retaining wall. In addition to the recommended lateral earth pressure, retaining walls adjacent to streets should be designed to resist a uniform lateral pressure of 100 pounds per square foot

(psf) due to normal street vehicle traffic, if applicable. The retaining wall designer should contact the geotechnical engineer for any required geotechnical input in estimating surcharge loads.

If required, the retaining wall designer may use a seismic lateral earth pressure increment of 14 pcf. This increment should be applied in addition to the provided static lateral earth pressure using a triangular distribution with the resultant acting at H/3 in relation to the base of the retaining structure (where H is the retained height). Per Section 1803.5.12 of the California Building Code (CBC), the seismic earth pressure is applicable to "structures assigned to Seismic Design Category D, E, or F in accordance with Section 1613." This seismic lateral earth pressure is estimated using the procedure outlined by the Structural Engineers Association of California (Lew, et al, 2010). The provided seismic lateral earth pressure is for a level backfill condition. Due to the sensitivity of seismic earth pressures for sloping conditions, the retaining wall designer should provide the geotechnical engineer with cross sections based on the configuration of the planned retaining walls in order to estimate the specific seismic increment.

Retaining wall structures should be provided with appropriate drainage and appropriately waterproofed. To reduce, but not eliminate, saturation of near surface soils (1-foot) in front of the retaining walls, the perforated subdrain pipe should be located a minimum of 1-foot below lower adjacent (non-retained) pad grade. The outlet pipe should be sloped to drain to a suitable outlet. We do not recommend retaining wall outlet pipes be connected to area drains. If subdrains are connected to area drains, special care and information should be provided to homeowners to maintain these drains. Typical retaining wall drainage is illustrated in Figure 2. It should be noted that the recommended subdrain does not provide protection against seepage through the face of the wall and/or efflorescence. Efflorescence is a white crystalline powder (discoloration) that results when water containing soluble salts migrates over a period of time through the face of a retaining wall and evaporates. If such seepage or efflorescence is undesirable, retaining walls should be waterproofed accordingly to reduce this potential.

4.6 Fences and Freestanding Walls

As their name indicates, freestanding walls are those walls not designed to retain soil and/or water. These walls are generally located at the rear or side yard of lots. To reduce the potential for unsightly cracks due to differential settlement, we recommend the inclusion of construction joints at a maximum spacing of 16 feet on-center. This spacing may be altered by the structural engineer based upon the wall reinforcement. If the soil-moisture content below the wall foundation varies significantly, some wall movement should be expected. However, movement is unlikely to cause more than cosmetic distress. Allowable soil bearing values for wall footing design are provided in Section 4.4 above.

4.7 Subsurface Infiltration

Recent regulatory changes have occurred that mandate that storm water be infiltrated below grade into subsurface soils rather than collected in a conventional storm drain system. Typically, a combination of methods is implemented to reduce surface water runoff and increase infiltration including; permeable pavements/pavers for roadways and walkways, directing surface water runoff to grass-lined swales, retention areas, and/or drywells, etc.

It should be noted that collecting and concentrating surface water for the purpose of intentionally infiltrating below grade, conflicts with the geotechnical engineering objective of directing surface water away from slopes, structures and other improvements. The geotechnical stability and integrity of a site is reliant upon appropriately handling surface water.

Infiltration rates were previously estimated for the site in the area of the large basin in the southeastern portion of the site (LGC Geotechnical, 2016). Estimation of infiltration rates was performed in general accordance with guidelines set forth by the County of Riverside (2011). The tested infiltration rates are considered representative of the site soils in the southeast portion of the site. These tested infiltration rates do not include any factor of safety but have been normalized to correct the 3-Dimensional flow that occurs within the field test to 1-Dimensional flow out of the bottom of the boring. The approximate infiltration test locations are shown on the Geotechnical Map (Sheet 1) and the infiltration test data is summarized in Table 2 on the following page.

TABLE 4

Summary of Infiltration Testing

Boring/Infiltration Location	Approx. Depth Below EG (ft)	Approx. Bottom of Infiltration Test Elevation (ft)	Infiltration Rate (in/hr.)	
			Tested	Design*
I-1A	9.95	907	3.0	1.0
I-2A	9.85	904	1.0	0.33
I-1B	6	908	7.4	2.5
I-2B	6	908	27.7	9.2
I-3B	4	908	13.9	4.6

*Includes a minimum factor of safety of 3 from Tested Rate per Table 1 – Infiltration Testing Requirements, County of Riverside Guidelines (2011).

It should be emphasized that infiltration test results are only representative of the location and depth where they are performed. Varying subsurface conditions may exist outside of the test locations which could alter the calculated infiltration rates indicated above. Infiltration tests are performed using relatively clean water free of particulates, silt, etc.

Based on the previous infiltration testing data and our knowledge of the site soils, it is recommended that a provisional design infiltration rate of 2.0 inches per hour may be utilized for infiltration systems associated with Bedford Marketplace. The recommended infiltration rate provided herein shall be verified prior to construction based on final locations and elevations of proposed infiltration systems.

4.7 Control of Surface Water and Drainage Control

From a geotechnical perspective, we recommend that compacted finished grade soils adjacent to proposed structures be sloped away from the proposed structures and towards an approved drainage device or unobstructed swale. Drainage swales, wherever feasible, should not be constructed within 5 feet of buildings. Where lot and building geometry necessitates that drainage swales be routed closer than 5 feet to structural foundations, we recommend the use of area drains together with drainage swales. Drainage swales used in conjunction with area drains should be designed by the project civil engineer so that a properly constructed and maintained system will prevent ponding within 5 feet of the foundation. Code compliance of grades is not the purview of the geotechnical consultant.

Planters with open bottoms adjacent to buildings should be avoided. Planters should not be designed adjacent to buildings unless provisions for drainage, such as catch basins, liners, and/or area drains, are made. Overwatering must be avoided.

4.8 Geotechnical Plan Review

When available, project plans (grading, foundation, etc.) should be reviewed by LGC Geotechnical from a geotechnical viewpoint and updated recommendations shall be provided as necessary. Additional field work may be necessary based on the proposed design.

4.9 Geotechnical Observation and Testing

The recommendations provided in this report are based on limited subsurface observations and geotechnical analysis. The interpolated subsurface conditions should be checked in the field during construction by a representative of LGC Geotechnical. Geotechnical observation and testing is required per Section 1705 of the 2016 California Building Code (CBC).

Geotechnical observation and/or testing should be performed by LGC Geotechnical at the following stages:

- During grading (removal bottoms, fill placement, etc.);
- During retaining wall backfill and compaction;
- During utility trench backfill and compaction;
- After presoaking building pad and other concrete-flatwork subgrades, and prior to placement of aggregate base or concrete;
- Preparation of pavement subgrade and placement of aggregate base;
- After building and wall footing excavation and prior to placement of steel reinforcement and/or concrete; and
- When any unusual soil conditions are encountered during any construction operation subsequent to issuance of this report.

5.0 LIMITATIONS

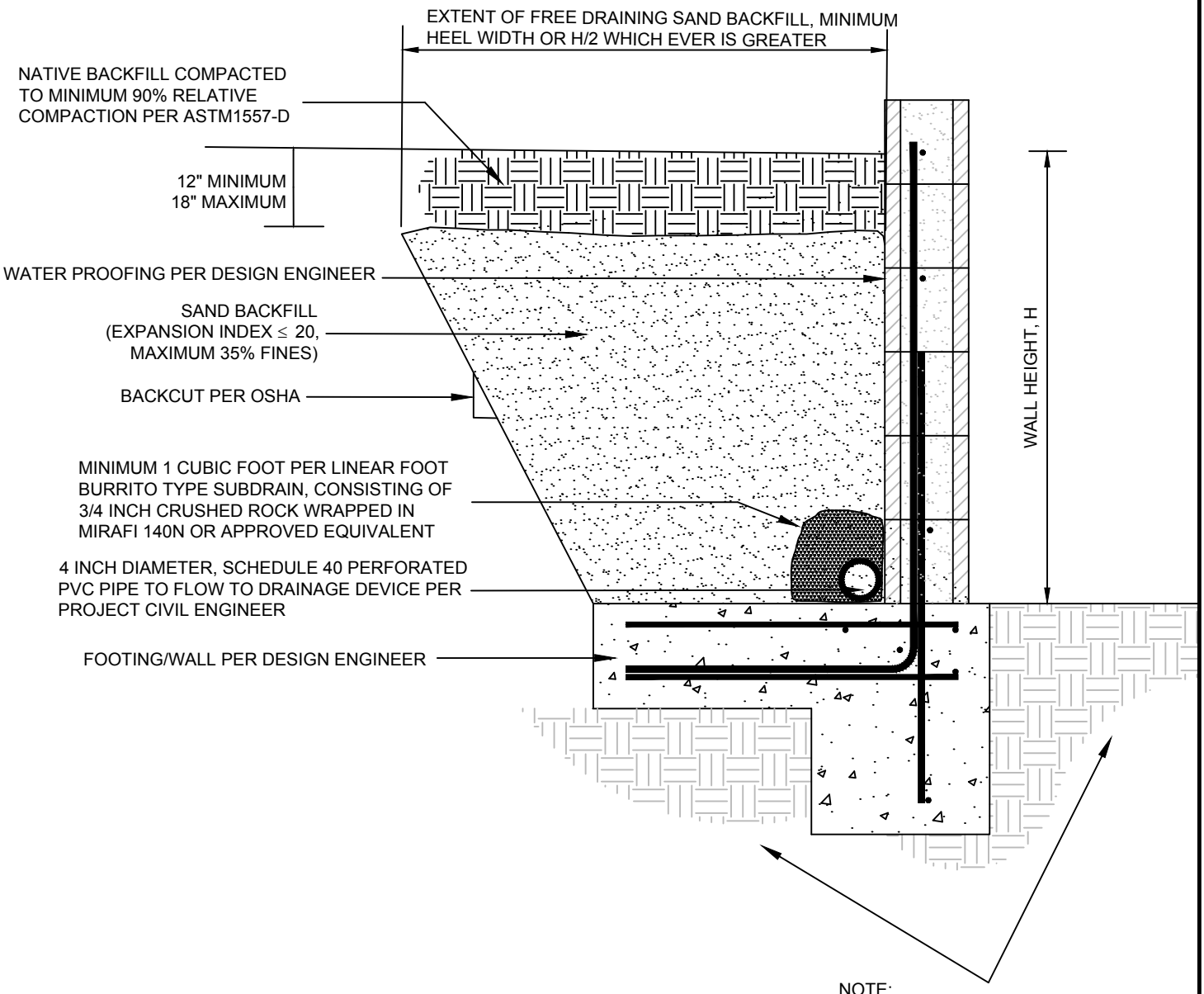
Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable soils engineers and geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report.

This report is based on data obtained from limited observations of the site, which have been extrapolated to characterize the site. While the scope of services performed is considered suitable to adequately characterize the site geotechnical conditions relative to the proposed development, no practical evaluation can completely eliminate uncertainty regarding the anticipated geotechnical conditions in connection with a subject site. Variations may exist and conditions not observed or described in this report may be encountered during grading and construction.

This report is issued with the understanding that it is the responsibility of the owner, or of his/her representative, to ensure that the information and recommendations contained herein are brought to the attention of the other consultants (at a minimum the civil engineer, structural engineer, landscape architect) and incorporated into their plans. The contractor should properly implement the recommendations during construction and notify the owner if they consider any of the recommendations presented herein to be unsafe, or unsuitable.

The findings of this report are valid as of the present date. However, changes in the conditions of a site can and do occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. The findings, conclusions, and recommendations presented in this report can be relied upon only if LGC Geotechnical has the opportunity to observe the subsurface conditions during grading and construction of the project, in order to confirm that our preliminary findings are representative for the site. This report is intended exclusively for use by the client, any use of or reliance on this report by a third party shall be at such party's sole risk.

In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and modification.



LGC Geotechnical, Inc.

FIGURE 2

Retaining Wall Backfill Detail

(Approved On-Site or Imported Sand Backfill)

PROJECT NAME	Bedford Marketplace
PROJECT NO.	19080-01
ENG.	TJL / /KAD
SCALE	Not to Scale
DATE	July 2019

Appendix A
References

APPENDIX A

References

American Concrete Institute, 2014, Building Code Requirements for Structural Concrete (ACI 318-14) and Commentary (ACI 318R-14).

American Society of Civil Engineers (ASCE), 2013, Minimum Design Loads for Buildings and Other Structures, ASCE/SEI 7-10, Third Printing, 2013.

ASTM International, Annual Book of ASTM Standards, Volume 04.08.

California Building Standards Commission, 2016, California Building Code, California Code of Regulations Title 24, Volumes 1 and 2, dated July 2016.

California Department of Conservation, Division of Mines and Geology, 1997, Guidelines for Evaluating and Mitigating Seismic Hazards in California, CDMG Special Publication 117.

_____, 2000, Digital Images of Official Maps of Alquist-Priolo Earthquake Fault Zones of California, Southern Region, CDMG CD 2000-03.

CASC Engineering and Consulting (CASC) 2014, City of Corona, State of California, Mass Grading Plans, Tract No. 36294, cad file received via email July 23, 2014.

_____, 2015, City of Corona, State of California, Mass Grading Plans, TTM 32694, Arantine Hills, Sheets 1 through 46, dated September 22, 2015.

County of Riverside, 2011, Low Impact Development BMP Design Handbook, Appendix A – Infiltration Testing, revised September 2011.

Hunsaker & Associates, 2019, Conceptual Grading Plan, Bedford Marketplace, dated July 19, 2019.

LGC Geotechnical, Inc., 2014, Geotechnical Mass Grading Plan Review and Preliminary Geotechnical Recommendations for Proposed "Arantine" Residential Development, Tract 36294, City of Corona, California, Project No. 13208-01, dated August 7, 2014.

_____, 2015, Preliminary Geotechnical Recommendations of Remedial Grading Conditions for the Proposed "Arantine" Residential Development, Tract 36294, City of Corona, California, Project No. 13208-01, dated March 10, 2015.

_____, 2019, Geotechnical Rough Grading Plan Review of Tract 37644, Phase 2 of the Bedford Development, City of Corona, California, Project No. 13208-01, dated May 31, 2019.

Lew, et al, 2010, Seismic Earth Pressures on Deep Basements, Structural Engineers Association of California (SEAOC) Convention Proceedings.

LOR Geotechnical Group, Inc., 2002, Preliminary Geotechnical Feasibility Investigation, 580± Acres, Bedford Canyon, Corona Area, Riverside County, California, Project No. 31558.1, dated March 25, 2002.

_____, 2003, Preliminary Update and Document Review of Seismic Hazards, 508 ± Acres, Bedford Canyon, Corona, California, Project No. 31558.3, dated February 5, 2003.

_____, 2004, Addendum Fault Investigation, 508 ± Acres, Arantine Hills, Corona, California, Project No. 31558.32, dated November 16, 2004.

_____, 2009, Arantine Hills Master Planned Community, City of Corona, Riverside County, California, Project No. 31558.14, dated October 15, 2009.

_____, 2010, Bedford Canyon Bluff Slope Failure Considerations as a Factor in the Baseline Sediment Yield and Transport Study, Arantine Hills Master Planned Community, City of Corona, Riverside County, California, Project No. 31558.92, dated March 9, 2010.

Structural Engineers Association of California (SEAOC), 2019, Seismic Design Maps, Retrieved June 18, 2019, from https://seismicmaps.org/

Appendix B
Subsurface Data

From LOR, 2002

APPENDIX B
FIELD INVESTIGATION

Subsurface Exploration

The site was investigated on January 31, February 1, 4 through 7, and 14 of 2002 and consisted of excavating a total of 31 trenches to depths between 4.5 to 15.0 feet below the existing ground surface and advancing a total of 23 borings to depths between 24.0 and 51.1 feet below the existing ground surface. The approximate locations of the trenches and borings are shown on Enclosures A-7 and A-8, within Appendix A.

The exploration was conducted using a FORD 555 E backhoe with a 24-inch bucket. The soil encountered were continuously logged by a geologist from this firm who visually observed the site, maintained detailed logs of the trenches, obtained disturbed soil samples for laboratory evaluation and testing, and classified the soils encountered by visual examination in accordance with the Unified Soil Classification System.

In-place density determinations were conducted at selected levels, within the trenches utilizing the Nuclear Gauge Method (ASTM D 2922). Disturbed soil samples were obtained at soil changes and other selected levels within the trenches. The samples were placed in sealed containers for transport to the laboratory.

The exploration was conducted using a CME-55 drill rig equipped with an 8-inch diameter hollow stem auger. The soils were continuously logged by a geologist from this firm who inspected the site, maintained detailed logs of the borings, obtained undisturbed, as well as disturbed, soil samples for evaluation and testing, and classified the soils by visual examination in accordance with the Unified Soil Classification System.

Relatively undisturbed samples of the subsoils were obtained at a maximum interval of 5 feet. The samples were recovered by using a California split barrel sampler of 2.50 inch inside diameter and 3.00 inch outside diameter from the ground surface to 35 feet deep. The samplers were driven by a 140 pound automatic trip hammer dropped from a height of 30 inches. The number of hammer blows required to drive the sampler into the ground the final 12 inches were recorded and further converted to an equivalent SPT N-value. Factors such as efficiency of the automatic trip hammer used during this investigation (80%), borehole diameter (8"), and rod length at the test depth were considered for further computing of equivalent SPT N-values corrected for

field procedures ($\approx N_{60}$) which are included in the boring logs, Enclosures B-1 through B-23.

The undisturbed soil samples were retained in brass sample rings of 2.42 inches in diameter and 1.00 inch in height, and placed in sealed plastic containers. Disturbed soil samples were obtained at selected levels within the borings and placed in sealed containers for transport to the laboratory.

All samples obtained were taken to our laboratory for storage and testing. Detailed logs of the trenches and borings are presented on the enclosed Trench and Boring Logs, Enclosures B-1 through B-54. A Sampling Key is presented on Enclosure B.

CONSISTENCY OF SOILS

SANDS

SPT BLOWS	CONSISTENCY
0 - 4	Very loose
4 - 10	Loose
10 - 30	Medium dense
30 - 50	Dense
Over 50	Very dense

COHESIVE SOILS

SPT BLOWS	CONSISTENCY
0 - 2	Very soft
2 - 4	Soft
4 - 8	Medium
8 - 15	Stiff
15 - 30	Very stiff
30 - 60	Hard
Over 60	Very Hard

SAMPLING KEY

Symbol	Description
	- INDICATES CALIFORNIA SPLIT SPOON SOIL SAMPLE
	- INDICATES SAND CONE OR NUCLEAR DENSITY TEST
	- INDICATES BAG SAMPLE
	- INDICATES STANDARD PENETRATION TEST (SPT) SOIL SAMPLE

MAJOR DIVISIONS			LITHOLOGY	U.S.C.S.	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS: MORE THAN 50% OF MATERIAL IS LARGER THAN 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS: MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GARVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS: MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SAND, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS: MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF RICH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS AND MANURE WITH HIGH ORGANIC MATERIALS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS.

PARTICLE SIZE LIMITS

BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

12" 3" ¾" No. 4 No. 10 No. 40 200

(U.S. STANDARD SIEVE SIZE)

SAMPLE KEY

PROJECT: 580± ACRES, BEDFORD CANYON, CORONA AREA, RIVERSIDE CO., CA	PROJECT NO.: 31558.1
CLIENT: BLUESTONE COMMUNITIES	ENCLOSURE: B
LOR Geotechnical Group, Inc.	DATE: MARCH 2002
	SCALE: NO SCALE

LOG OF BORING B-1

DEPTH IN FEET	EQUIVALENT SPT BLOW COUNTS	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	SAMPLE TYPE	U.S.C.S	DESCRIPTION
0		5.2		T	SM	TOPSOIL/FERTILIZER 2 inches thick.
	16	3.7	102.0		SM	@ 0.2 feet TOPSOIL: SILTY SAND with gravel, approximately 15% angular gravel to 2", 10% coarse grained sand, 15% medium grained sand, 30% fine grained sand, 30% silty fines, dark brown, damp.
						@ 1 foot ALLUVIUM: SILTY SAND with gravel, approximately 15% angular gravel to 2", 15% coarse grained sand, 20% medium grained sand, 30% fine grained sand, 20% silty fines, grayish brown, damp.
5		9.2	113.1			
10	27	8.1	92.7			@ 10 feet becomes finer grained, approximately 70% fine grained sand, 30% silty fines, dark brown, damp.
15	36	2.8	121.2			@ 15 feet becomes coarser grained, approximately 20% fine gravel, 10% coarse grained sand, 20% medium grained sand, 35% fine grained sand, 15% silty fines, brown, damp.
20	50-6"	1.6	115.8			END OF BORING DUE TO REFUSAL ON BOULDER
25						No fill No caving No groundwater No bedrock
30						
35						

PROJECT: 500+ Acres in Bedford Canyon, Corona, CA		PROJECT NUMBER:	31558.1
CLIENT:	Bluestone Communities	ELEVATION:	904
		DATE DRILLED:	January 31, 2002
LOR GEOTECHNICAL GROUP INC.		EQUIPMENT:	CME 55
		HOLE DIA.: 8"	ENCLOSURE: B-1

LOG OF BORING B-18

DEPTH IN FEET	EQUIVALENT SPT BLOW COUNTS	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S	DESCRIPTION
		TEST DATA					
0		5.2				SM	FILL: SILTY SAND, approximately 5% fine gravel, 10% coarse grained sand, 15% medium grained sand, 35% fine grained sand, 35% silty fines, brown, damp, loose.
	18	5.5	92.2				
						SM	@ 3 feet ALLUVIUM: SILTY SAND, approximately 5% fine subrounded gravel, 15% coarse grained sand, 20% medium grained sand, 30% fine grained sand, 30% silty fines, dark brown, damp.
5	23	2.8	117.3				
10	7	7.3	122.6				@ 10 feet becomes finer grained, approximately 10% coarse grained sand, 15% medium grained sand, 40% fine grained sand, 35% silty fines, brown, damp. @ 11 feet very difficult drilling on cobbles or gravel.
15	17	2.8	113.2				
20	26	5.0	121.8				@ 20 feet becomes coarser grained, approximately 10% fine gravel, 15% coarse grained sand, 30% medium grained sand, 20% fine grained sand, 25% silty fines, brown, damp. @ 22 feet very difficult drilling on gravel and/or cobbles.
							END OF BORING DUE TO SLOW PROGRESS
25							Fill 0-3' No caving No groundwater No bedrock
30							
35							

PROJECT: **500+ Acres in Bedford Canyon, Corona, CA**		PROJECT NUMBER:	**31558.1**
CLIENT:	**Bluestone Communities**	ELEVATION:	**921**
		DATE DRILLED:	**February 14, 2002**
LOR GEOTECHNICAL GROUP INC.		EQUIPMENT:	**CME 55**
		HOLE DIA.: **8"**	ENCLOSURE: **B-18**

LOG OF BORING B-19

DEPTH IN FEET	EQUIVALENT SPT BLOW COUNTS		MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S	DESCRIPTION
	TEST DATA								
0			5.0					SM	FILL: SILTY SAND, approximately 10% very fine gravel, 10% medium grained sand, 45% fine grained sand, 35% silty fines, brown, loose, damp.
	15		5.7		108.7				
5	17		3.4		112.1			SM	@ 4 feet ALLUVIUM: SILTY SAND with gravel, approximately 20% gravel to 1 inch, 10% coarse grained sand, 15% medium grained sand, 30% fine grained sand, 25% silty fines, brown, damp.
10	33		4.1		120.3				
15	25		4.8		118.9				
20	56		3.4		124.8				
25	46		3.5		127.6				
30									END OF BORING Fill 0-4' No caving No groundwater No bedrock
35									

PROJECT: 500+ Acres in Bedford Canyon, Corona, CA		PROJECT NUMBER:	31558.1
CLIENT:	Bluestone Communities	ELEVATION:	892
		DATE DRILLED:	February 14, 2002
LOR GEOTECHNICAL GROUP INC.		EQUIPMENT:	CME 55
		HOLE DIA.: 8"	ENCLOSURE: B-19

LOG OF TRENCH T-1

DEPTH IN FEET	ESTIMATED COMPACTION (%)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S	DESCRIPTION
0		6.0				SM	FILL: SILTY SAND, approximately 5% gravel to 1/2", 10% coarse grained sand, 30% medium grained sand, 30% fine grained sand, 25% silty fines, dark brown, moist, loose.
	81	12.6	106.6			SM	@ 1 foot ALLUVIUM: SILTY SAND, trace gravel to 1/2", approximately 5% coarse grained sand, 10% medium grained sand, 50% fine grained sand, 35% silty fines, dark brown, moist, roots.
	85	4.8	111.6				@ 3 feet approximately 20% gravel to 1", 20% coarse grained sand, 20% medium grained sand, 25% fine grained sand, 15% silty fines, dark brown, moist.
							@ 3.5 feet trace cobbles to 10".
5						ML	@ 5 feet SANDY SILT, trace gravel to 1", trace coarse grained sand, approximately 5% medium grained sand, 40% fine grained sand, 55% silty fines with trace clay of low plasticity, dark brown, moist.
10							@ 11 feet occasional cobble to 5".
						SM	@ 13 feet SILTY SAND, approximately 20% gravel to 2", 20% coarse grained sand, 30% medium grained sand, 10% fine grained sand, 20% silty fines, red brown, moist.
15							END OF TRENCH
							Fill 0-1'
							No caving
							No groundwater
							No bedrock

TEST DATA

PROJECT: 500+ Acres in Bedford Canyon, Corona, CA		PROJECT NUMBER:	31558.1
CLIENT: Bluestone Communities		ELEVATION:	916
		DATE EXCAVATED:	February 4, 2002
LOR GEOTECHNICAL GROUP INC.		EQUIPMENT:	Ford 555E
		BUCKET W.: 24"	ENCLOSURE: B-24

LOG OF TRENCH T-2

DEPTH IN FEET	ESTIMATED COMPACTION (%)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	U.S.C.S	DESCRIPTION
0		4.4		SM	FILL: **SILTY SAND with gravel, approximately 10% gravel to 1", 10% coarse grained sand, 15% medium grained sand, 35% fine grained sand, 30% silty fines, brown, moist, loose.**
				SW	**@ 1 foot ALLUVIUM: WELL GRADED SAND with gravel, approximately 15% gravel to 6", 20% coarse grained sand, 30% medium grained sand, 5% silty fines, brown, moist.**
	89	3.3	116.1		
5	84	5.8	109.7		**@ 4 feet approximately 5% gravel to 1", 35% coarse grained sand, 35% medium grained sand, 20% fine grained sand, 55% silty fines, brown, moist.** **@ 5 feet occasional cobble to 10".**
10					
15					**END OF TRENCH**

Fill 0-1'
No caving
No groundwater
No bedrock

PROJECT:	**500+ Acres in Bedford Canyon, Corona, CA**	PROJECT NUMBER:	**31558.1**
CLIENT:	**Bluestone Communities**	ELEVATION:	**914**
		DATE EXCAVATED:	**February 4, 2002**
LOR GEOTECHNICAL GROUP INC.		EQUIPMENT:	**Ford 555E**
		BUCKET W.: **24"**	ENCLOSURE: **B-25**

LOG OF TRENCH T-3

DEPTH IN FEET	ESTIMATED COMPACTION (%)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	U.S.C.S	DESCRIPTION
0		18.3		SM	FILL: **SILTY SAND with trace clay, approximately 5% coarse grained sand, 15% medium grained sand, 45% fine grained sand, 35% silty fines with trace clay of low plasticity, brown, moist, loose.**
	80	10.7	104.8	SW	**@ 1.5 feet** ALLUVIUM: **WELL GRADED SAND with silt, approximately 10% gravel to 1", 30% coarse grained sand, 35% medium grained sand, 20% fine grained sand, 10% silty fines, brown, moist.**
	90	4.9	118.7		
5					**@ 5 feet occasional cobble to 10".**
					@ 7 feet approximately 30% gravel to 10", 25% coarse grained sand, 25% medium grained sand, 20% fine grained sand, 5% silty fines, brown, moist.
10					
15					**END OF TRENCH**
					Fill 0-1.5' **No caving** **No groundwater** **No bedrock**

PROJECT:	**500+ Acres in Bedford Canyon, Corona, CA**	PROJECT NUMBER:	**31558.1**
CLIENT:	**Bluestone Communities**	ELEVATION:	**896**
		DATE EXCAVATED:	**February 4, 2002**
LOR GEOTECHNICAL GROUP INC.		EQUIPMENT:	**Ford 555E**
		BUCKET W.: **24"**	ENCLOSURE: **B-26**

Appendix C
Laboratory Summary from Phase 1 Grading

APPENDIX C

Laboratory Test Results

The laboratory testing program was directed towards providing quantitative data relating to the relevant engineering properties of the site soils. Samples considered representative of site conditions were tested in general accordance with American Society for Testing and Materials (ASTM) procedure and/or California Test Methods (CTM), where applicable. The following summary is a brief outline of the test type and a table summarizing the test results.

Laboratory Compaction: The maximum dry density and optimum moisture content of typical materials were determined in accordance with ASTM D1557. The results of these tests are presented in the table below.

No.	Description	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
1	Red-Brown Silty, Clayey Sand w/ Gravel	137.0	7.5
2	Red-Brown Silty, Clayey Sand w/ Gravel	134.5	7.5
3	Dark Brown Silty Gravel w/ Sand	152.5	3.5
4	Brown Silty Sand w/ Gravel	133.5	8.0
5	Dark Brown Silty, Clayey Sand w/ Gravel	140.0	6.0
6	Dark Brown Clayey Sand w/ Gravel	142.0	6.0
8A	Gravelly Sand (30% Rock)	144.0	6.0
8B	Gravelly Sand (35% Rock)	146.0	5.0
8C	Gravelly Sand (40% Rock)	147.0	5.0
8D	Gravelly Sand (45% Rock)	149.0	5.0

Expansion Index: The expansion potential of selected samples was evaluated by the Expansion Index Test, Standard ASTM D4829. Specimens are molded under a given compactive energy to approximately the optimum moisture content and approximately 50 percent saturation or approximately 90 percent relative compaction. The prepared 1-inch-thick by 4-inch-diameter specimens are loaded to an equivalent 144 psf surcharge and are inundated with tap water until volumetric equilibrium is reached. The results of these tests are presented in the table below.

Sample Location	Sample Number	Expansion Index	Expansion Potential*
Near "A" Street	EI-1	58	Medium
Central Fill	EI-2	1	Very Low
Near "C" Street	EI-3	7	Very Low
Central Fill	EI-4	0	Very Low
Central Fill	EI-5	8	Very Low

* ASTM D4829

Appendix D
General Earthwork and Grading Specifications for Rough Grading

General Earthwork and Grading Specifications for Rough Grading

1.0 General

1.1 Intent

These General Earthwork and Grading Specifications are for the grading and earthwork shown on the approved grading plan(s) and/or indicated in the geotechnical report(s). These Specifications are a part of the recommendations contained in the geotechnical report(s). In case of conflict, the specific recommendations in the geotechnical report shall supersede these more general Specifications. Observations of the earthwork by the project Geotechnical Consultant during the course of grading may result in new or revised recommendations that could supersede these specifications or the recommendations in the geotechnical report(s).

1.2 The Geotechnical Consultant of Record

Prior to commencement of work, the owner shall employ a qualified Geotechnical Consultant of Record (Geotechnical Consultant). The Geotechnical Consultant shall be responsible for reviewing the approved geotechnical report(s) and accepting the adequacy of the preliminary geotechnical findings, conclusions, and recommendations prior to the commencement of the grading.

Prior to commencement of grading, the Geotechnical Consultant shall review the "work plan" prepared by the Earthwork Contractor (Contractor) and schedule sufficient personnel to perform the appropriate level of observation, mapping, and compaction testing.

During the grading and earthwork operations, the Geotechnical Consultant shall observe, map, and document the subsurface exposures to verify the geotechnical design assumptions. If the observed conditions are found to be significantly different than the interpreted assumptions during the design phase, the Geotechnical Consultant shall inform the owner, recommend appropriate changes in design to accommodate the observed conditions, and notify the review agency where required.

The Geotechnical Consultant shall observe the moisture-conditioning and processing of the subgrade and fill materials and perform relative compaction testing of fill to confirm that the attained level of compaction is being accomplished as specified. The Geotechnical Consultant shall provide the test results to the owner and the Contractor on a routine and frequent basis.

1.3 The Earthwork Contractor

The Earthwork Contractor (Contractor) shall be qualified, experienced, and knowledgeable in earthwork logistics, preparation and processing of ground to receive fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall review and accept the plans, geotechnical report(s), and these Specifications prior to commencement of grading. The Contractor shall be solely responsible for performing the grading in accordance with the project plans and specifications. The Contractor shall prepare and submit to the owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of “equipment” of work and the estimated quantities of daily earthwork

contemplated for the site prior to commencement of grading. The Contractor shall inform the owner and the
Geotechnical Consultant of changes in work schedules and updates to the work plan at least 24 hours in advance of such changes so that appropriate personnel will be available for observation and testing. The Contractor shall not assume that the Geotechnical Consultant is aware of all grading operations.

The Contractor shall have the sole responsibility to provide adequate equipment and methods to accomplish the earthwork in accordance with the applicable grading codes and agency ordinances, these Specifications, and the recommendations in the approved geotechnical report(s) and grading plan(s). If, in the opinion of the Geotechnical Consultant, unsatisfactory conditions, such as unsuitable soil, improper moisture condition, inadequate compaction, insufficient buttress key size, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the Geotechnical Consultant shall reject the work and may recommend to the owner that construction be stopped until the conditions are rectified. It is the contractor's sole responsibility to provide proper fill compaction.

2.0 Preparation of Areas to be Filled

2.1 Clearing and Grubbing

Vegetation, such as brush, grass, roots, and other deleterious material shall be sufficiently removed and properly disposed of in a method acceptable to the owner, governing agencies, and the Geotechnical Consultant.

The Geotechnical Consultant shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 1 percent of organic materials (by volume). Nesting of the organic materials shall not be allowed.

If potentially hazardous materials are encountered, the Contractor shall stop work in the affected area, and a hazardous material specialist shall be informed immediately for proper evaluation and handling of these materials prior to continuing to work in that area.

As presently defined by the State of California, most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) have chemical constituents that are considered to be hazardous waste. As such, the indiscriminate dumping or spillage of these fluids onto the ground may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall not be allowed. The contractor is responsible for all hazardous waste relating to his work. The Geotechnical Consultant does not have expertise in this area. If hazardous waste is a concern, then the Client should acquire the services of a qualified environmental assessor.

2.2 Processing

Existing ground that has been declared satisfactory for support of fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Existing ground that is not satisfactory shall be over-excavated as specified in the following section. Scarification shall continue until soils are broken down and free of oversize material and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction.

2.3 Over-excavation

In addition to removals and over-excavations recommended in the approved geotechnical report(s) and the grading plan, soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be over-excavated to competent ground as evaluated by the Geotechnical Consultant during grading.

2.4 Benching

Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. Please see the Standard Details for a graphic illustration. The lowest bench or key shall be a minimum of 15 feet wide and at least 2 feet deep, into competent material as evaluated by the Geotechnical Consultant. Other benches shall be excavated a minimum height of 4 feet into competent material or as otherwise recommended by the Geotechnical Consultant. Fill placed on ground sloping flatter than 5:1 shall also be benched or otherwise over-excavated to provide a flat subgrade for the fill.

2.5 Evaluation/Acceptance of Fill Areas

All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive fill. The Contractor shall obtain a written acceptance from the Geotechnical Consultant prior to fill placement. A licensed surveyor shall provide the survey control for determining elevations of processed areas, keys, and benches.

3.0 Fill Material

3.1 General

Material to be used as fill shall be essentially free of organic matter and other deleterious substances evaluated and accepted by the Geotechnical Consultant prior to placement. Soils of poor quality, such as those with unacceptable gradation, high expansion potential, or low strength shall be placed in areas acceptable to the Geotechnical Consultant or mixed with other soils to achieve satisfactory fill material.

3.2 Oversize

Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 8 inches, shall not be buried or placed in fill unless location, materials, and placement methods are specifically accepted by the Geotechnical Consultant. Placement operations shall be such that nesting of oversized material does not occur and such that oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 vertical feet of finish grade or within 2 feet of future utilities or underground construction.

3.3 Import

If importing of fill material is required for grading, proposed import material shall meet the requirements of the geotechnical consultant. The potential import source shall be given to the Geotechnical Consultant at least 48 hours (2 working days) before importing begins so that its suitability can be determined and appropriate tests performed.

4.0 Fill Placement and Compaction

4.1 Fill Layers

Approved fill material shall be placed in areas prepared to receive fill (per Section 3.0) in near-horizontal layers not exceeding 8 inches in loose thickness. The Geotechnical Consultant may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.

4.2 Fill Moisture Conditioning

Fill soils shall be watered, dried back, blended, and/or mixed, as necessary to attain a relatively uniform moisture content at or slightly over optimum. Maximum density and optimum soil moisture content tests shall be performed in accordance with the American Society of Testing and Materials (ASTM Test Method D1557).

4.3 Compaction of Fill

After each layer has been moisture-conditioned, mixed, and evenly spread, it shall be uniformly compacted to not less than 90 percent of maximum dry density (ASTM Test Method D1557). Compaction equipment shall be adequately sized and be either specifically designed for soil compaction or of proven reliability to efficiently achieve the specified level of compaction with uniformity.

4.4 Compaction of Fill Slopes

In addition to normal compaction procedures specified above, compaction of slopes shall be accomplished by backrolling of slopes with sheepsfoot rollers at increments of 3 to 4 feet in fill elevation, or by other methods producing satisfactory results acceptable to the Geotechnical Consultant. Upon completion of grading, relative compaction of the fill, out to the slope face, shall be at least 90 percent of maximum density per ASTM Test Method D1557.

4.5 Compaction Testing

Field tests for moisture content and relative compaction of the fill soils shall be performed by the Geotechnical Consultant. Location and frequency of tests shall be at the Consultant's discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to inadequate compaction (such as close to slope faces and at the fill/bedrock benches).

4.6 Frequency of Compaction Testing

Tests shall be taken at intervals not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of compacted fill soils embankment. In addition, as a guideline, at least one test shall be taken on slope faces for each 5,000 square feet of slope face and/or each 10 feet of vertical height of slope. The Contractor shall assure that fill construction is such that the testing schedule can be accomplished by the Geotechnical Consultant. The Contractor shall stop or slow down the earthwork construction if these minimum standards are not met.

4.7 Compaction Test Locations

The Geotechnical Consultant shall document the approximate elevation and horizontal coordinates of each test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established so that the Geotechnical Consultant can determine the test locations with sufficient accuracy. At a minimum, two grade stakes within a horizontal distance of 100 feet and vertically less than
5 feet apart from potential test locations shall be provided.

5.0 Subdrain Installation

Subdrain systems shall be installed in accordance with the approved geotechnical report(s), the grading plan, and the Standard Details. The Geotechnical Consultant may recommend additional subdrains and/or changes in subdrain extent, location, grade, or material depending on conditions encountered during grading. All subdrains shall be surveyed by a land surveyor/civil engineer for line and grade after installation and prior to burial. Sufficient time should be allowed by the Contractor for these surveys.

6.0 Excavation

Excavations, as well as over-excavation for remedial purposes, shall be evaluated by the Geotechnical Consultant during grading. Remedial removal depths shown on geotechnical plans are estimates only. The actual extent of removal shall be determined by the Geotechnical Consultant based on the field evaluation of exposed conditions during grading. Where fill-over-cut slopes are to be graded, the cut portion of the slope shall be made, evaluated, and accepted by the Geotechnical Consultant prior to placement of materials for construction of the fill portion of the slope, unless otherwise recommended by the Geotechnical Consultant.

7.0 Trench Backfills

7.1 The Contractor shall follow all OHSA and Cal/OSHA requirements for safety of trench excavations.

7.2 All bedding and backfill of utility trenches shall be done in accordance with the applicable provisions of Standard Specifications of Public Works Construction. Bedding material shall have a Sand Equivalent greater than 30 (SE>30). The bedding shall be placed to 1 foot over

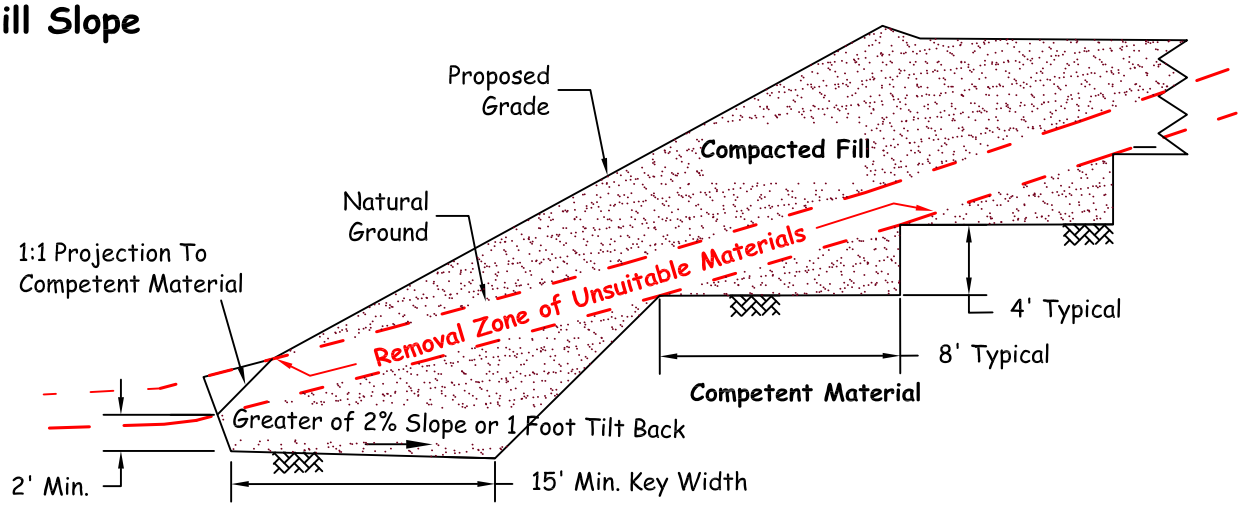
the top of the conduit and densified by jetting. Backfill shall be placed and densified to a minimum of 90 percent of maximum from 1 foot above the top of the conduit to the surface.

7.3 The jetting of the bedding around the conduits shall be observed by the Geotechnical Consultant.

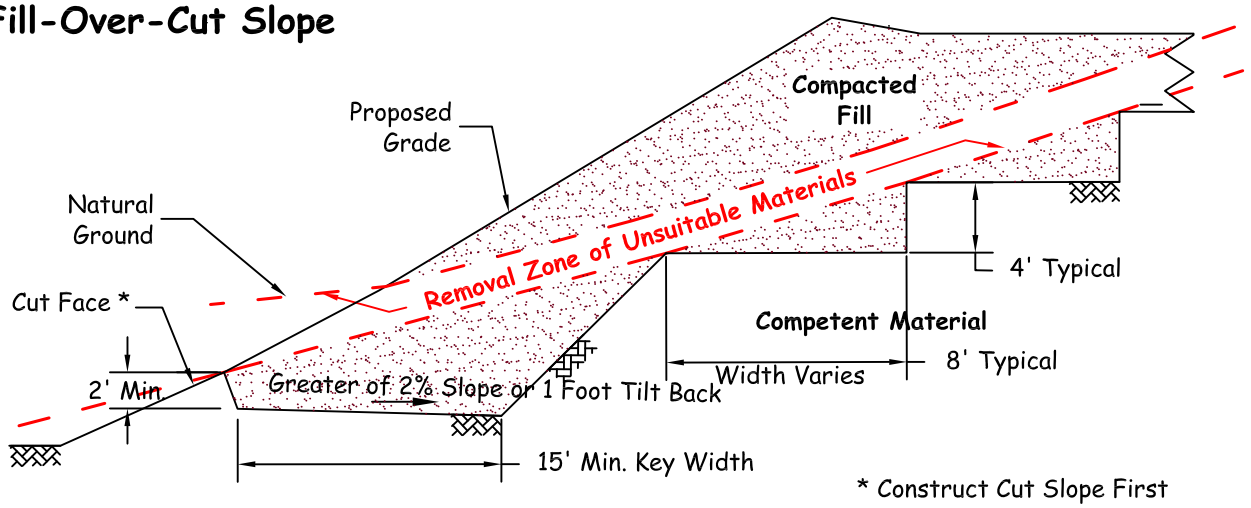
7.4 The Geotechnical Consultant shall test the trench backfill for relative compaction. At least one test should be made for every 300 feet of trench and 2 feet of fill.

7.5 Lift thickness of trench backfill shall not exceed those allowed in the Standard Specifications of Public Works Construction unless the Contractor can demonstrate to the Geotechnical Consultant that the fill lift can be compacted to the minimum relative compaction by his alternative equipment and method.

Fill Slope

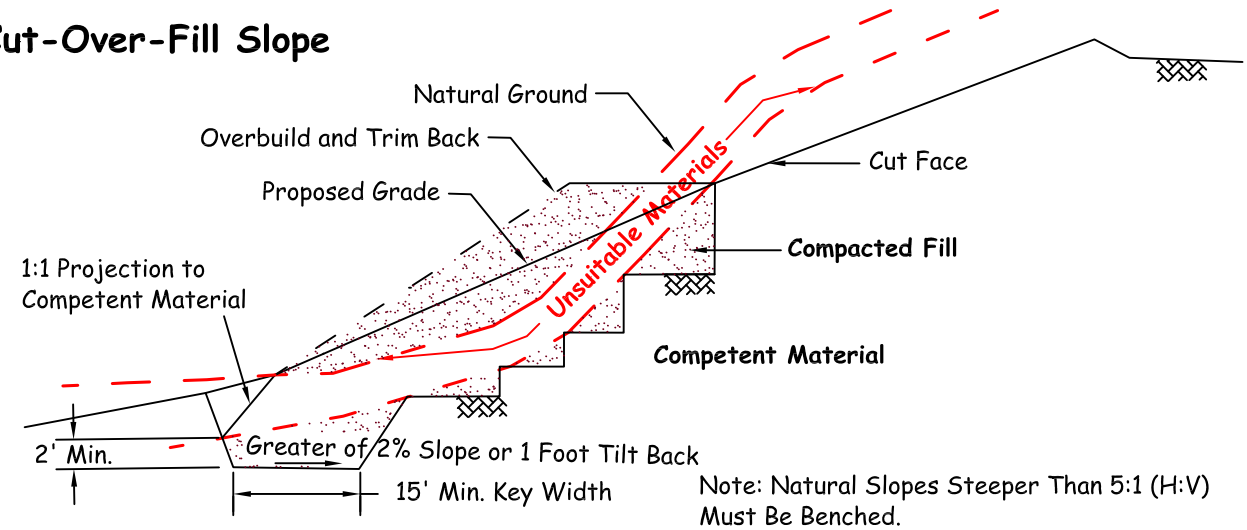


Fill-Over-Cut Slope



* Construct Cut Slope First

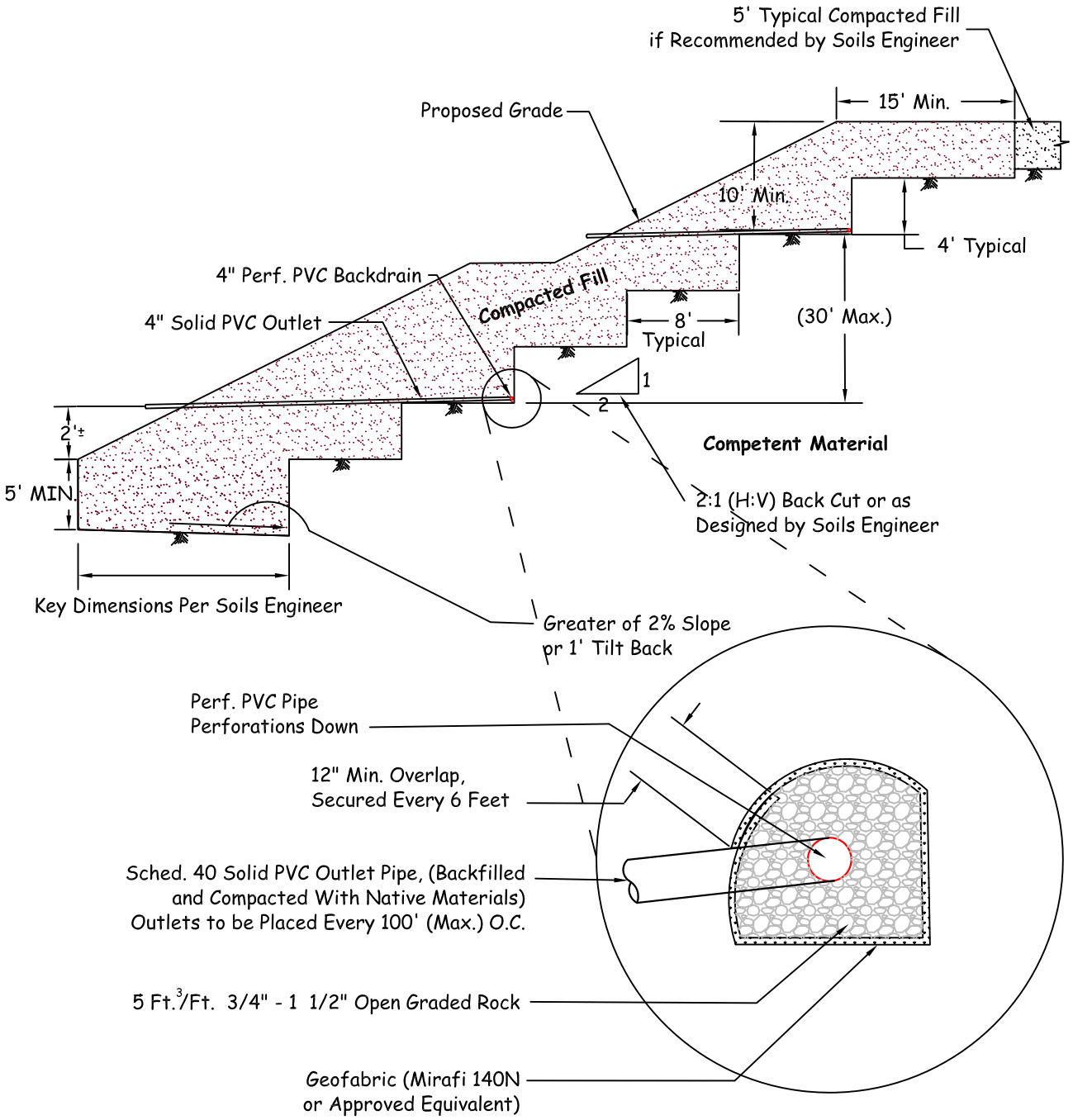
Cut-Over-Fill Slope



Note: Natural Slopes Steeper Than 5:1 (H:V) Must Be Benched.

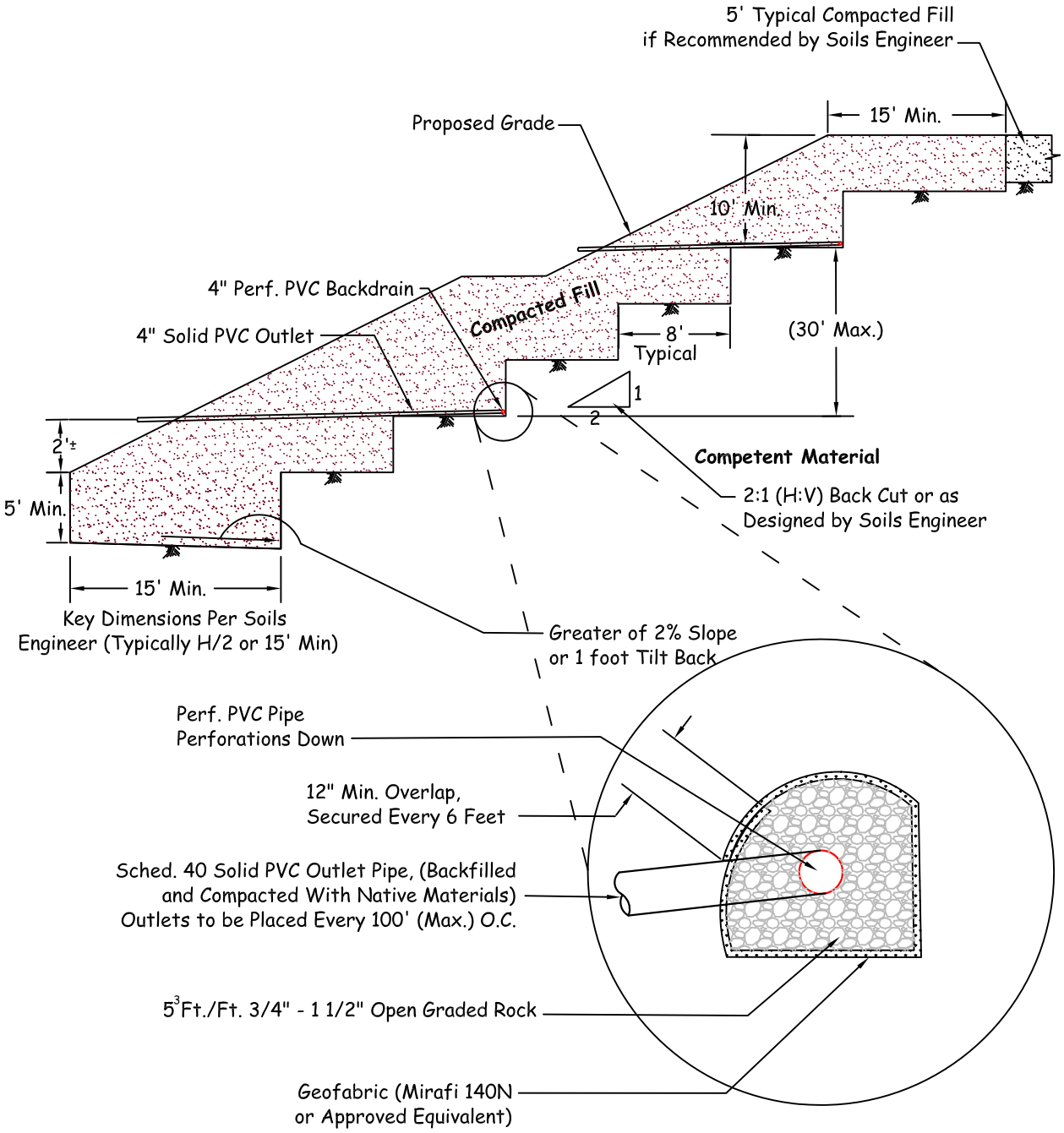
LGC Geotechnical, Inc.

KEYING AND BENCHING



LGC Geotechnical, Inc.

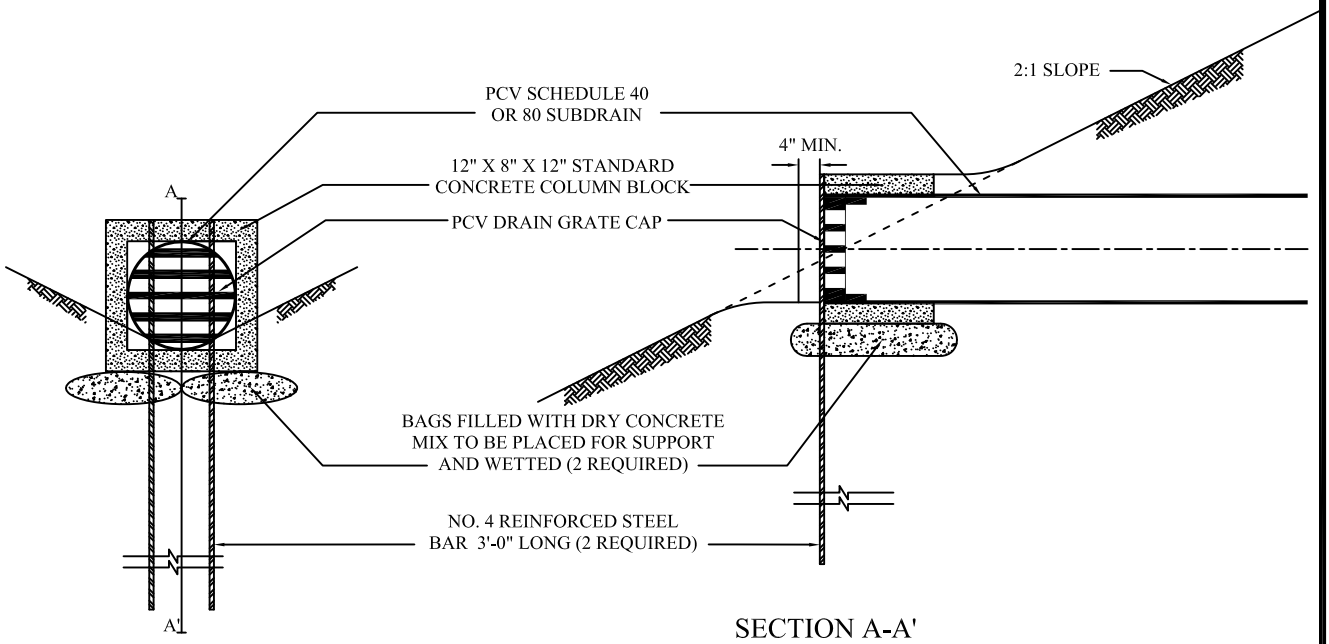
TYPICAL BUTTRESS DETAIL



LGC Geotechnical, Inc.

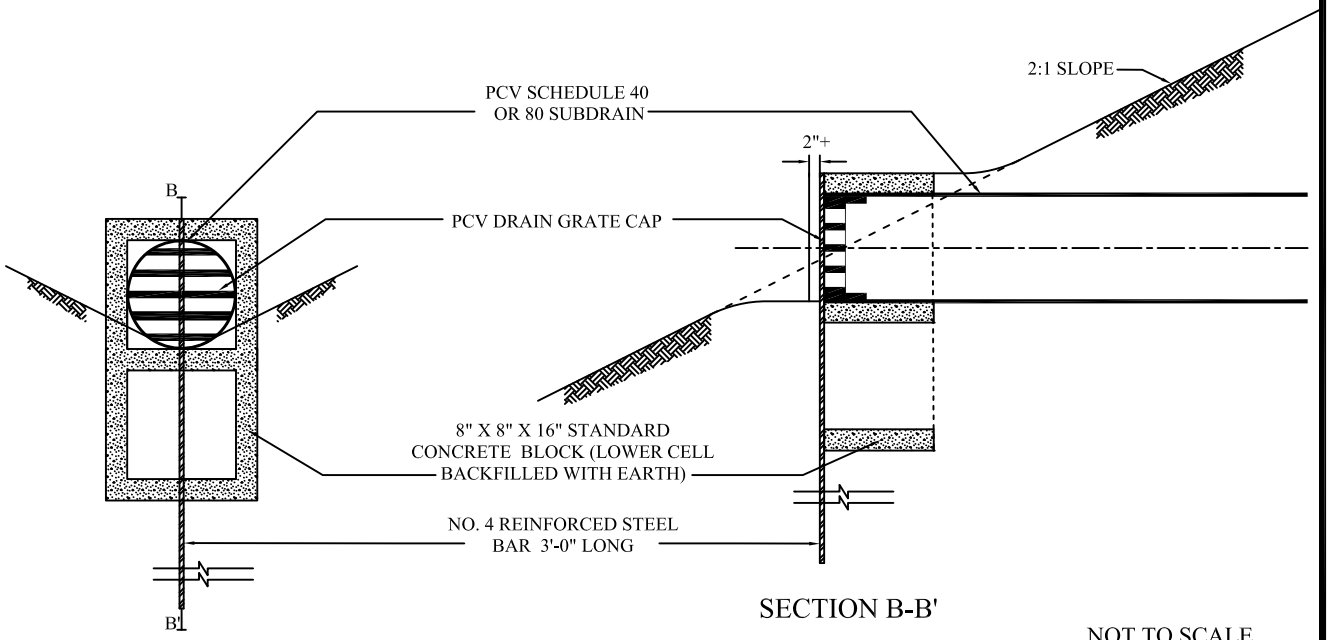
TYPICAL STABILIZATION FILL DETAIL

SUBDRAIN OUTLET MARKER -6" & 8" PIPE



SECTION A-A'

SUBDRAIN OUTLET MARKER -4" PIPE



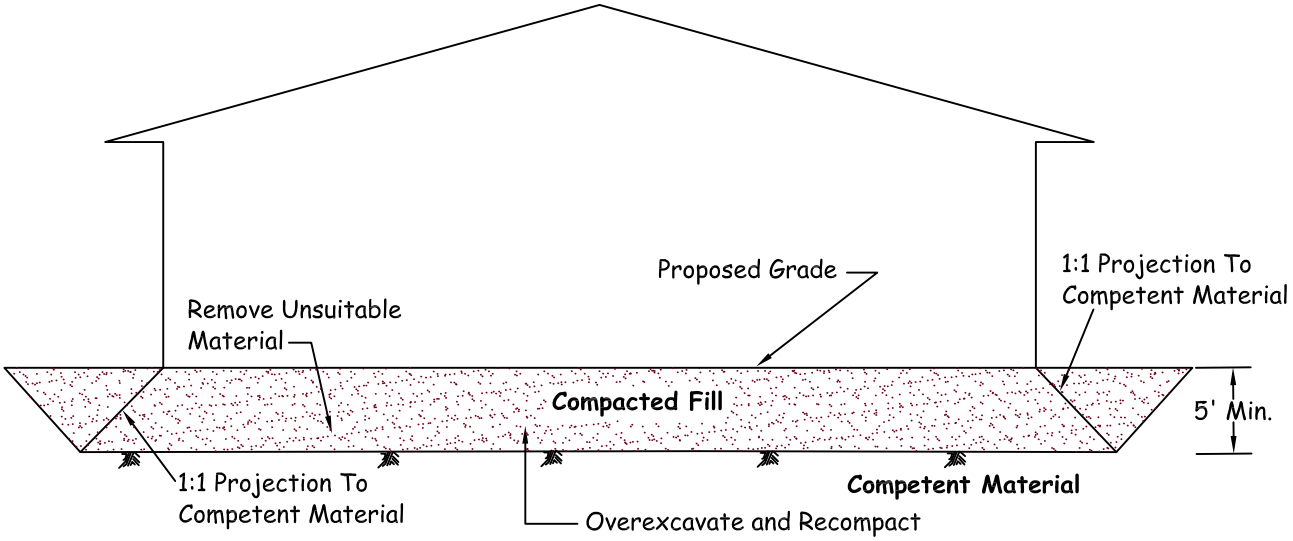
SECTION B-B'

NOT TO SCALE

LGC Geotechnical, Inc.

SUBDRAIN OUTLET MARKER DETAIL

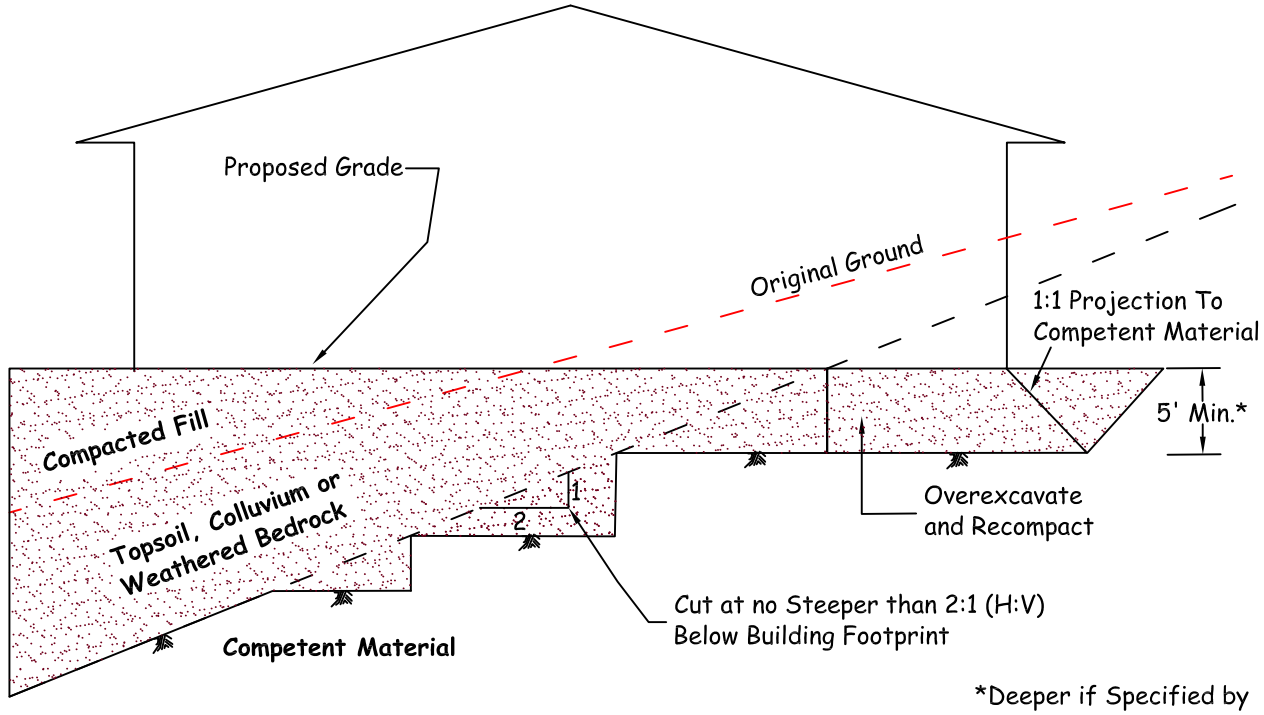
Cut Lot
(Exposing Unsuitable Soils at Design Grade)



Note 1: Removal Bottom Should be Graded With Minimum 2% Fall Towards Street or Other Suitable Area (as Determined by Soils Engineer) to Avoid Ponding Below Building

Note 2: Where Design Cut Lots are Excavated Entirely Into Competent Material, Overexcavation May Still be Required for Hard-Rock Conditions or for Materials With Variable Expansion Characteristics.

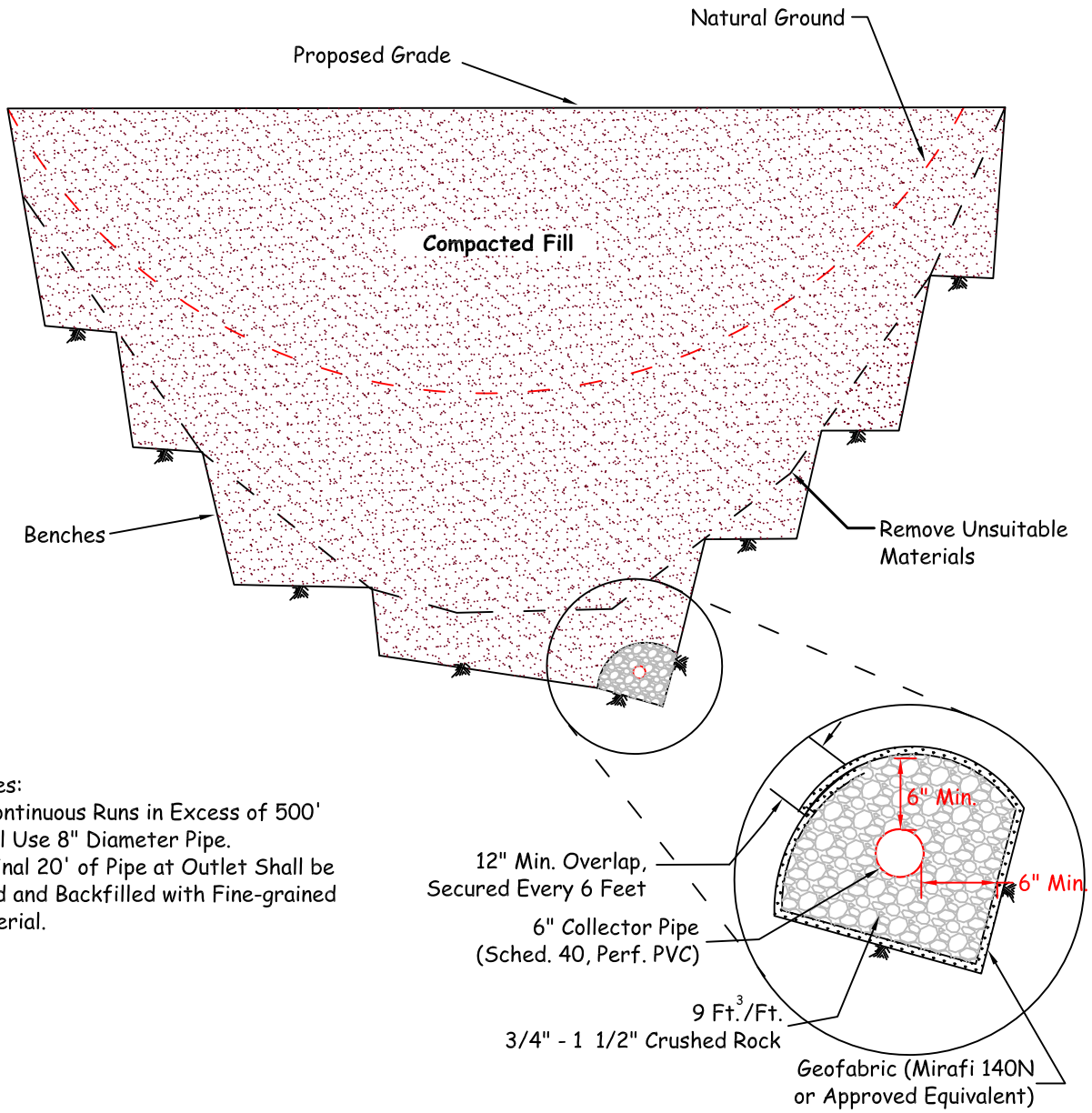
Cut/Fill Transition Lot



*Deeper if Specified by Soils Engineer

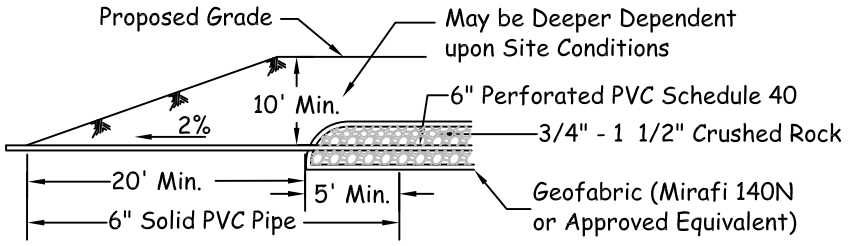
LGC Geotechnical, Inc.

CUT AND TRANSITION LOT OVEREXCAVATION DETAIL



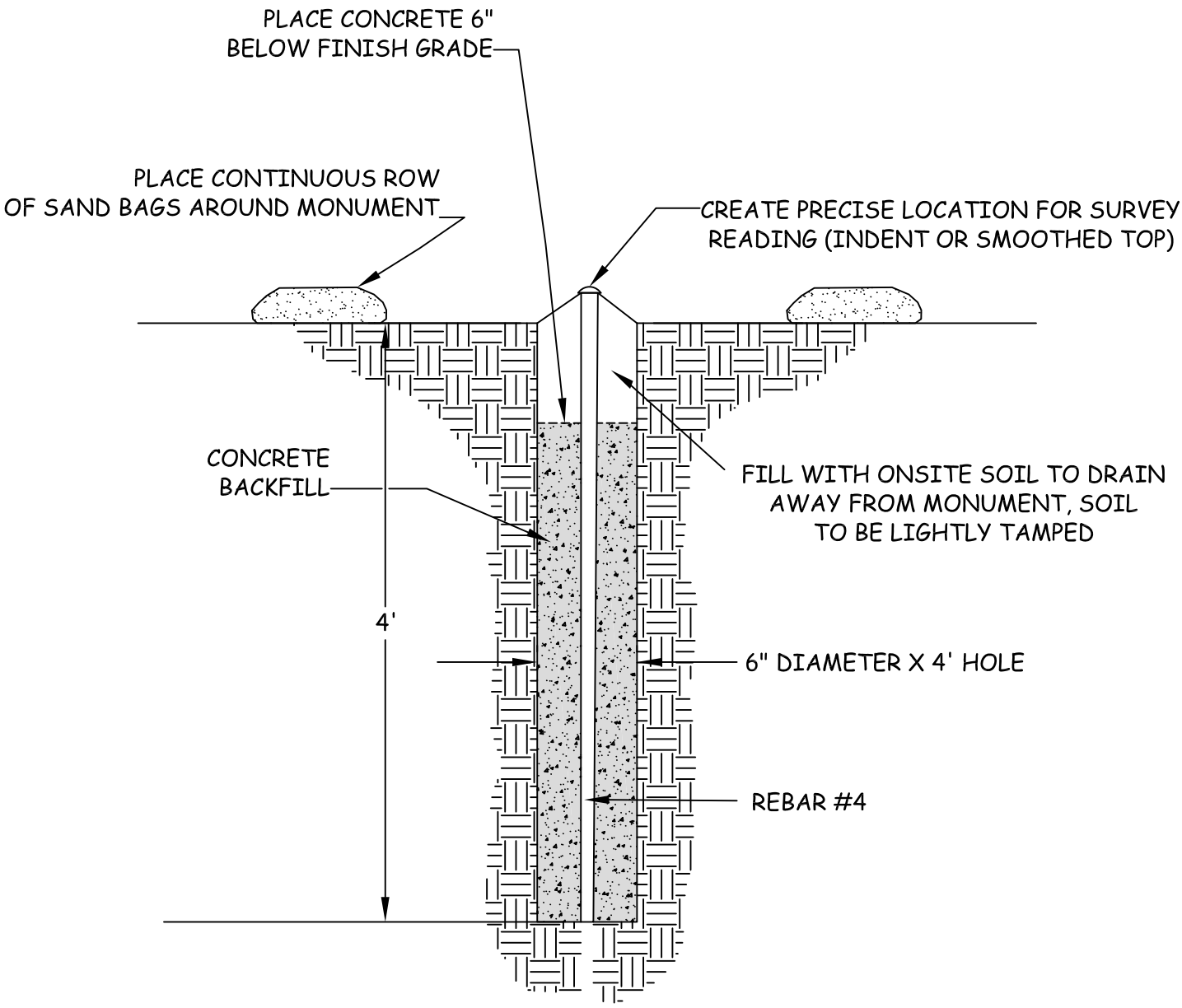
Notes:
1) Continuous Runs in Excess of 500' Shall Use 8" Diameter Pipe.
2) Final 20' of Pipe at Outlet Shall be Solid and Backfilled with Fine-grained Material.

Proposed Outlet Detail



LGC Geotechnical, Inc.

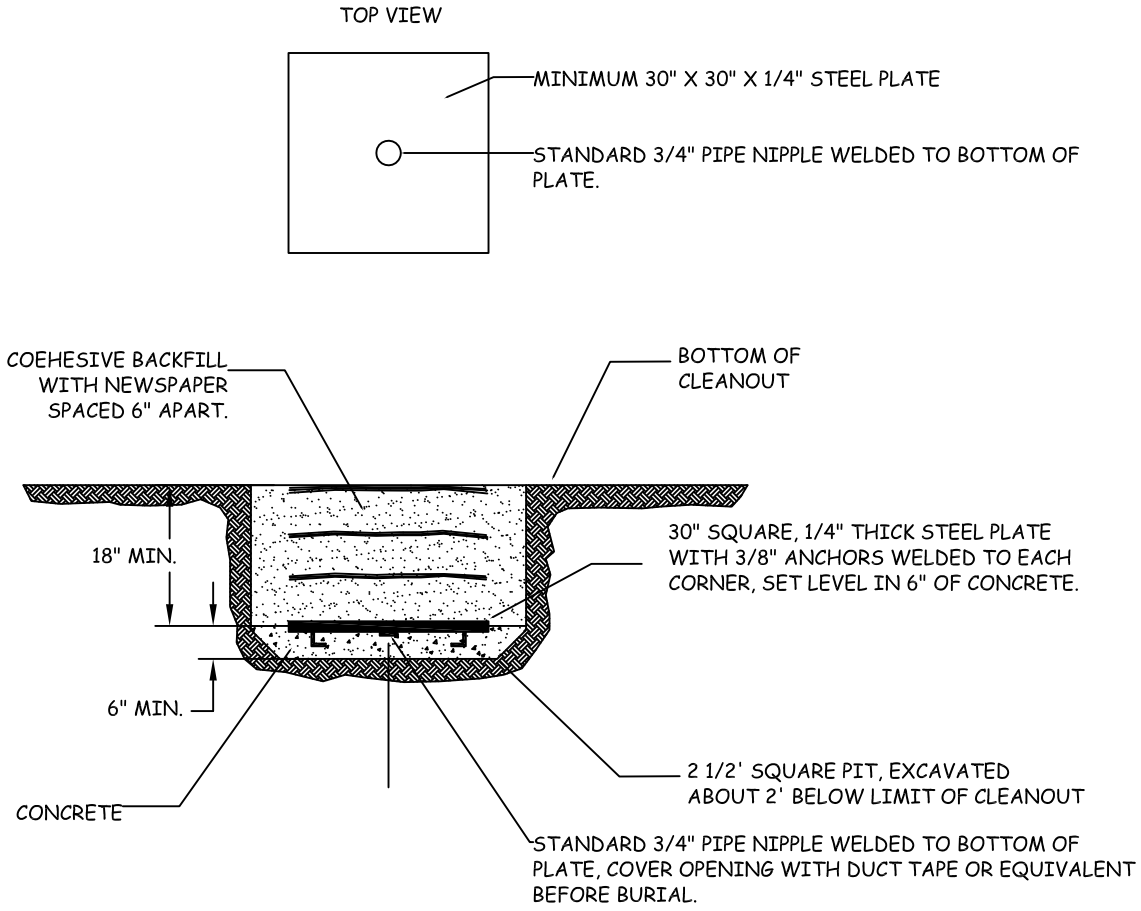
CANYON SUBDRAINS



NO CONSTRUCTION EQUIPMENT WITHIN 25 FEET
OF ANY INSTALLED SETTLEMENT MONUMENTS

LGC Geotechnical, Inc.

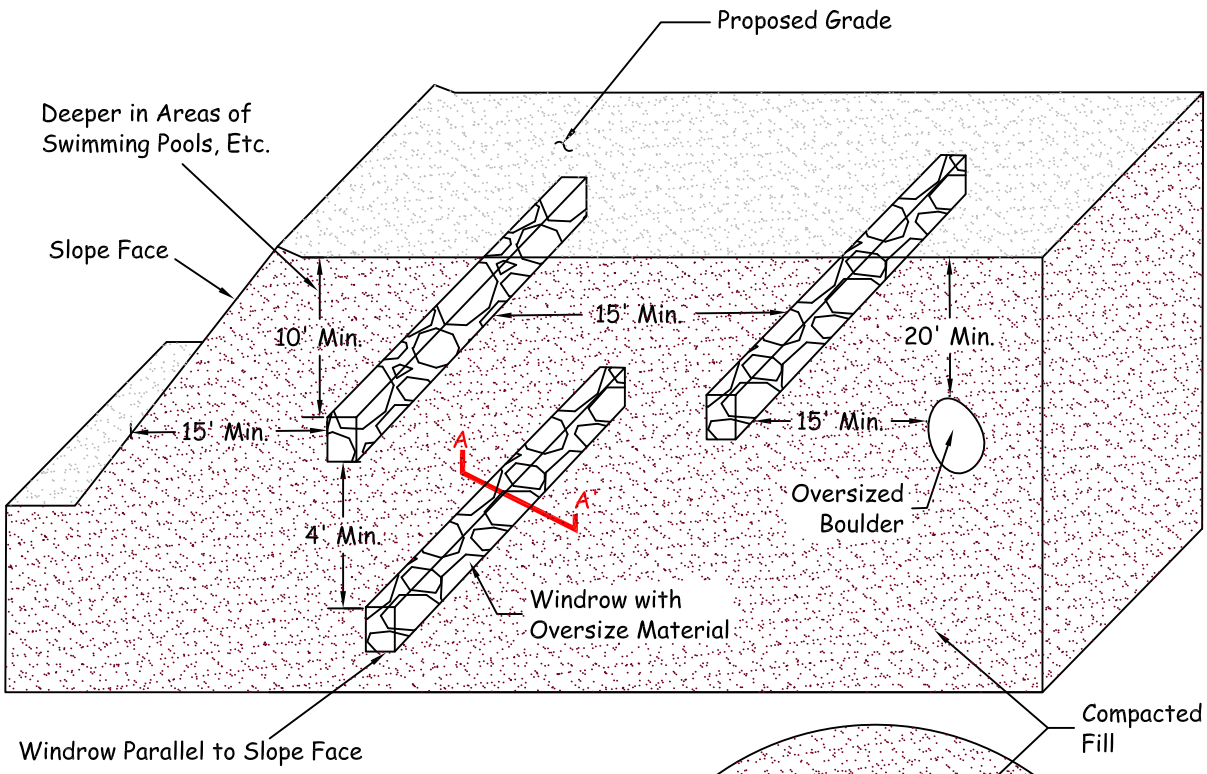
TYPICAL SURFACE SETTLEMENT MONUMENT

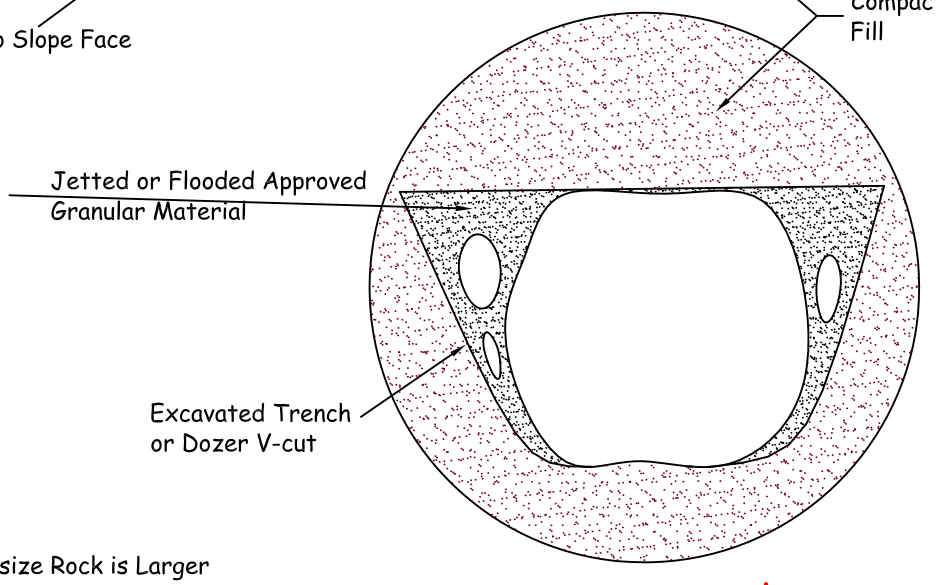


1. SURVEY FOR HORIZONTAL AND VERTICAL LOCATION TO NEAREST .01 INCH PRIOR TO BACKFILL USING KNOW LOCATIONS THAT WILL REMAIN INTACT DURING THE DURATION OF THE MONITORING PROGRAM. KNOW POINTS EXPLICITELY NOT ALLOWED ARE THOSE LOCATED ON FILL OR THAT WILL BE DESTROYED DURING GRADING.
2. IN THE EVENT OF DAMAGE TO SETTLEMENT PLATE DURING GRADING, CONTRACTOR SHALL IMMEDIATELY NOTIFY THE GEOTECHNICAL ENGINEER AND SHALL BE RESPONSIBLE FOR RESTORING THE SETTLEMENT PLATES TO WORKING ORDER.
3. DRILL TO RECOVER AND ATTACH RISER PIPE.

LGC Geotechnical, Inc.

TYPICAL SETTLEMENT PLATE AND RISER





Note: Oversize Rock is Larger
than 8" in Maximum Dimension.

Section A-A'

LGC Geotechnical, Inc.

OVERSIZE ROCK DISPOSAL DETAIL

LEGEND:

Af	Artificial Fill Placed During Phase 1 Rough Grading
Qal	Quaternary Alluvial Deposits, Circled Where Buried
5	Estimated Removal Depths
LOR-B-19 ⊗ T.D. = 30'	Approximate Location of Boring by Others with Total Depth in Feet (LOR, 2002)
LOR-T-3	Approximate Location of Exploratory Trench by Others (LOR, 2002)
I-2A ▢ T.D. = 5'	Approximate Location of Intiltration Test (LGC Geotechnical, 2015)
I-3(B) ■	Approximate Location of Excavation for Infiltration Testing (LGC Geotechnical, 2016)
	Approximate Geologic Contact
	Approximate Limits of Bedford Market Place

Phase 1 Grading (Completed)

Partial Grading Completed

No Grading Completed

Phase 1 Grading (Completed)

Phase 1 Grading (Completed)

EAGLE GLEN PARKWAY / CAJALCO ROAD

'H' STREET

'C' STREET

BEDFORD CANYON RD

INTERSTATE 15

PRACEL MAP 30156 PARCEL 5

LOT 8 TRACT 36294

LOT 37 TRACT 36294

LOT 38 TRACT 36294

LOT 39 TRACT 36294

LOT 9

LOT 10

LOT "A"

LOT "B"

LOT "N"

LOR-T-1

LOR-B-18 T.D. = 23'

LOR-B-1 T.D. = 22'

LOR-T-2

LOR-B-19 T.D. = 30'

LOR-T-3

I-1A T.D. = 9'

I-1(B) & I-2B

I-2A T.D. = 8'

I-3(B)

PAD A ±3,600 SF

PAD B ±4,000 SF

PAD C ±2,200 SF

PAD D ±3,600 SF

PAD E ±5,000 SF

PAD F ±5,826 SF

PAD G ±5,290 SF

REST. A (RESTAURANT) ±7,705 SF

MAJOR A LEVEL 1 = 24,460 SF LEVEL 2 = 13,540 SF TOTAL FLOOR AREA = 38,000 SF

MAJOR B ±5,000 SF

SHOPS 2 ±4,875 SF

MAJOR C ±11,125 SF

REST. B ±5,500 SF

5 STORY HOTEL 135 ROOMS LAND AREA 3.3 AC. ±144,099 SF BUILDING AREA ±86,753 SF FOOTPRINT ±24,804 SF

BASIN TOP: 918 (4.6 AC.) BOTTOM: 905 (3.1 AC.) (2' FREEBOARD) (79,979 CYS)

BASIN TOP: 900.0 BOTTOM: 895.0 (1' FREEBOARD) (1.86 ACFT)

BASIN/LIFT STATION ACCESS

LOT LINE ADJUSTMENT 18-001 INST. # 2018-0137411, RECD 4/10/18

FUTURE SCE SWITCH STATION

LIFT STATION

SCALE: 1"=60'

60' 0 60' 120'

LGC Geotechnical, Inc.
131 Calle Iglesia, Ste. 200
San Clemente, CA 92672
TEL (949) 369-6141 FAX (949) 369-6142

Geotechnical Map
Bedford Market Place

PROJECT NAME	Bedford Market Place
PROJECT NO.	18002-01
ENG. / GEOL.	TJL / KAD
SCALE	1" = 60'
DATE	July 2019

SHEET 1 of 1

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

NOT APPLICABLE

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

NOT APPLICABLE

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

Table C.1 Type 'A', Self-Treating Areas

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
DMA 'C'	122,436 sf.	Revegetated	Drip

R 07 W | R 06 W | R 05 W | R 04 W | R 03 W | R 02 W | R 01 W | R 01 E | R 02 E | R 03 E | R 04 E | R 05 E

T 01 S
T 02 S
T 03 S
T 04 S
T 05 S
T 06 S
T 07 S
T 08 S

06	05	04	03	02	01
07	08	09	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

PROJECT SITE
D85=0.850

0.85 MiraLoma
0.61 RiversideNorth
0.54 RiversideSouth
0.68 PigeonPass
0.66 MorenoEast
0.85 Beaumont
0.88 PradoDam
0.51 Woodcrest
0.50 LakeMathews
0.68 PerrisReservoir
0.87 VistaGrandeGS
0.70 SanJacintoNWS
1.18 Idyllwild
0.58 SunCity
0.68 Winchester
0.90 HurkeyCreek
0.70 ElsinoreNWS
1.11 ElCarisoStation
0.77 WildomarLaCresta
0.52 SkinnerLake
0.65 Anza
0.77 SantaRosaPlateau
1.00 TemeculaNWS
0.64 AguangaValley

Santa Ana River Watershed
Santa Margarita Watershed

JURUPA VALLEY | EASTVALE | NORCO | CORONA | RIVERSIDE | MORENO VALLEY | CALIMESA | BEAUMONT | SAN JACINTO | PERRIS | CANYON LAKE | LAKE ELSINORE | WILDOMAR | MENIFEE | HEMET | MURRIETA | TEMECULA

N

Rain Gage Locations

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Isohyetal Map for the 85th Percentile 24 hour Storm Event

July 2011

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	Hunsaker & Assoicates	Date	1/10/2020
Designed by	Brian Lowell, PE	Case No	
Company Project Number/Name	Bedford Commercial Site		

BMP Identification

BMP NAME / ID: Infiltration Basin 'B'

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.85 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
B	*602100*	*Mixed Surface Types*	*0.8*	*0.60*	*360836.1*			

Infiltration Basin - Design Procedure (Rev. 03-2012)	BMP ID	Legend:	Required Entries / Calculated Cells

Company Name: Hunsakeer & Associates — Date: Jan-20

Designed by: Brian Lowell, PE — County/City Case No.:

Design Volume

a) Tributary area (BMP subarea)	A_T =	13.8	acres
b) Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	25,560	ft^3

Maximum Depth

a) Infiltration rate	I =	2	in/hr
b) Factor of Safety (See Table 1, Appendix A: "Infiltration Testing" from this BMP Handbook)	FS =	3	
c) Calculate D_1 $D_1 = \frac{I\ (in/hr) \times 72\ hrs}{12\ (in/ft) \times FS}$	D_1 =	4.0	ft
d) Enter the depth of freeboard (at least 1 ft)		1	ft
e) Enter depth to historic high ground water (measured from **top** of basin)		100	ft
f) Enter depth to top of bedrock or impermeable layer (measured from **top** of basin)		100	ft
g) D_2 is the smaller of: Depth to groundwater - (10 ft + freeboard) and Depth to impermeable layer - (5 ft + freeboard)	D_2 =	89.0	ft
h) D_{MAX} is the smaller value of D_1 and D_2 but shall not exceed 5 feet	D_{MAX} =	4.0	ft

Basin Geometry

a) Basin side slopes (no steeper than 4:1)	z =	4	:1
b) Proposed basin depth (excluding freeboard)	d_B =	4	ft
c) Minimum bottom surface area of basin ($A_S = V_{BMP}/d_B$)	A_S =	6390	ft^2
d) Proposed Design Surface Area	A_D =	14000	ft^2

Forebay

a) Forebay volume (minimum 0.5% V_{BMP})	Volume =	128	ft^3
b) Forebay depth (height of berm/splashwall. 1 foot min.)	Depth =	200	ft
c) Forebay surface area (minimum)	Area =	1	ft^2
d) Full height notch-type weir	Width (W) =	4.0	in

Notes:

3.1 INFILTRATION BASIN

Type of BMP	LID - Infiltration
Treatment Mechanisms	Infiltration, Evapotranspiration (when vegetated), Evaporation, and Sedimentation
Maximum Treatment Area	50 acres
Other Names	Bioinfiltration Basin

Description

An Infiltration Basin is a flat earthen basin designed to capture the design capture volume, V_{BMP}. The stormwater infiltrates through the bottom of the basin into the underlying soil over a 72 hour drawdown period. Flows exceeding V_{BMP} must discharge to a downstream conveyance system. Trash and sediment accumulate within the forebay as stormwater passes into the basin. Infiltration basins are highly effective in removing all targeted pollutants from stormwater runoff.



Figure 1 – Infiltration Basin

See Appendix A, and Appendix C, Section 1 of *Basin Guidelines*, for additional requirements.

Siting Considerations

The use of infiltration basins may be restricted by concerns over ground water contamination, soil permeability, and clogging at the site. See the applicable WQMP for any specific feasibility considerations for using infiltration BMPs. Where this BMP is being used, the soil beneath the basin must be thoroughly evaluated in a geotechnical report since the underlying soils are critical to the basin's long term performance. To protect the basin from erosion, the sides and bottom of the basin must be vegetated, preferably with native or low water use plant species.

In addition, these basins may not be appropriate for the following site conditions:

- Industrial sites or locations where spills of toxic materials may occur
- Sites with very low soil infiltration rates
- Sites with high groundwater tables or excessively high soil infiltration rates, where pollutants can affect ground water quality
- Sites with unstabilized soil or construction activity upstream
- On steeply sloping terrain
- Infiltration basins located in a fill condition should refer to Appendix A of this Handbook for details on special requirements/restrictions

Setbacks

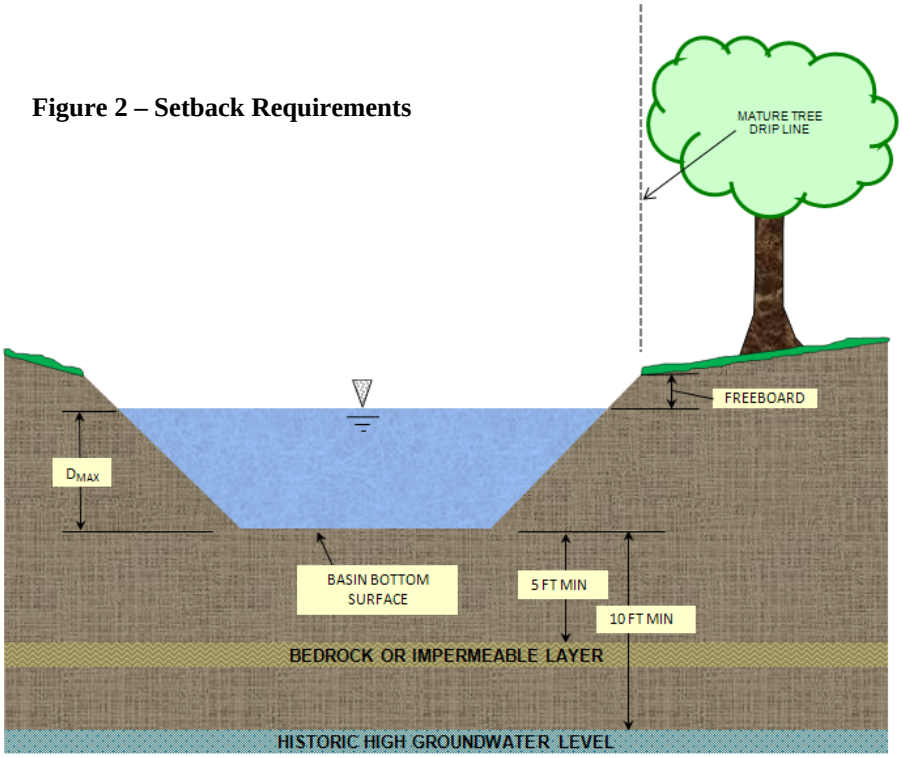
Always consult your geotechnical engineer for site specific recommendations regarding setbacks for infiltration trenches. Recommended setbacks are needed to protect buildings, existing trees, walls, onsite or nearby wells, streams, and tanks. Setbacks should be considered early in the design process since they can affect where infiltration facilities may be placed and how deep they are allowed to be. For instance, depth setbacks can dictate fairly shallow facilities that will have a larger footprint and, in some cases, may make an infiltration basin infeasible. In that instance, another BMP must be selected.

Infiltration basins typically must be set back:

- 10 feet from the historic high groundwater (measured vertically from the bottom of the basin, as shown in Figure 2)
- 5 feet from bedrock or impermeable surface layer (measured vertically from the bottom of the basin, as shown in Figure 2)
- From all existing mature tree drip lines as indicated in Figure 2 (to protect their root structure)
- 100 feet horizontally from wells, tanks or springs

Setbacks to walls and foundations must be included as part of the Geotechnical Report. All other setbacks shall be in accordance with applicable standards of the District's *Basin Guidelines* (Appendix C).

Figure 2 – Setback Requirements



Forebay

A concrete forebay shall be provided to reduce sediment clogging and to reduce erosion. The forebay shall have a design volume of at least 0.5% V_{BMP} and a minimum 1 foot high concrete splashwall / berm. Full height notch-type weir(s), offset from the line of flow from the basin inlet to prevent short circuiting, shall be used to outlet the forebay. It is recommended that two weirs be used and that they be located on opposite sides of the forebay (see Figure 2).

Overflow

Flows exceeding V_{BMP} must discharge to an acceptable downstream conveyance system. Where an adequate outlet is present, an overflow structure may be used. Where an embankment is present, an emergency spillway may be used instead. Overflows must be placed just above the design water surface for V_{BMP} and be near the outlet of the system. The overflow structure shall be similar to the District's Standard Drawing CB 110. Additional details may be found in the District's *Basin Guidelines* (Appendix C).

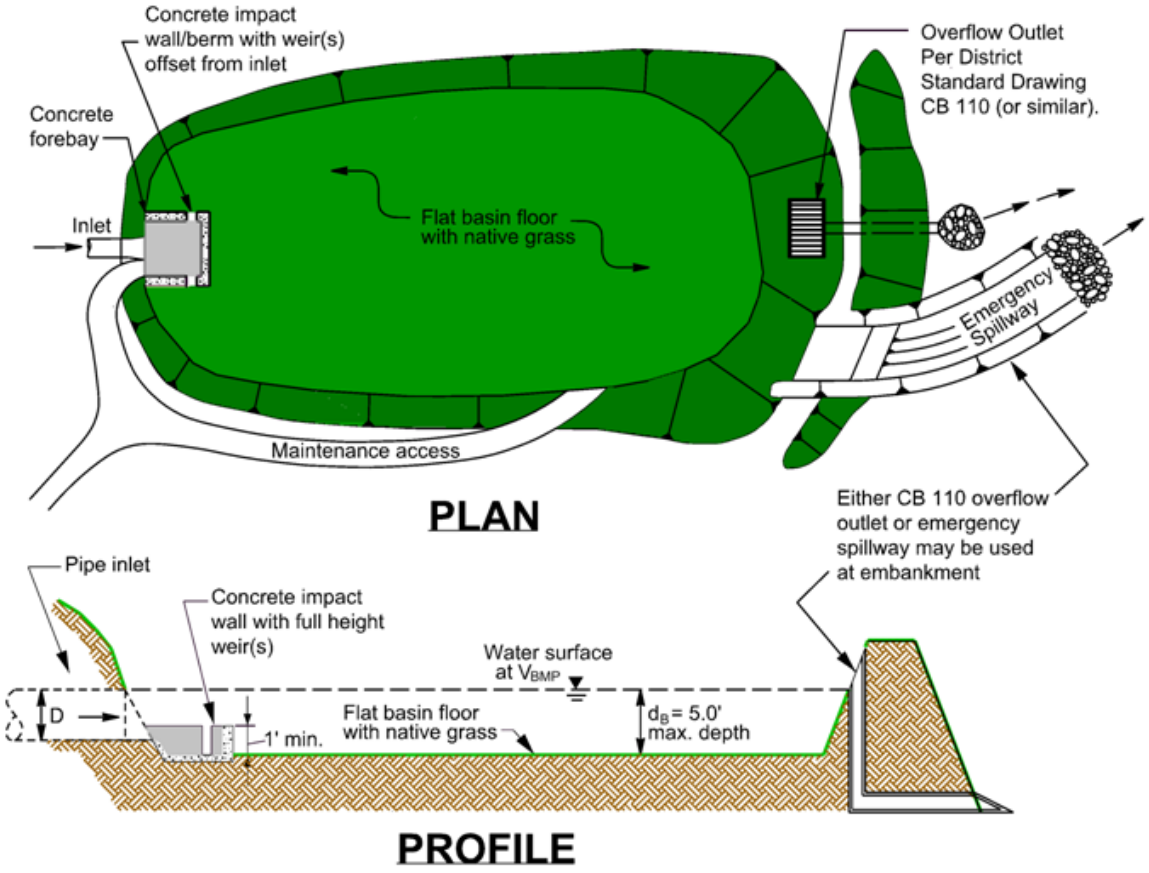


Figure 3 – Infiltration Basin

Landscaping Requirements

Basin vegetation provides erosion protection, improves sediment removal and assists in allowing infiltration to occur. The basin surface and side slopes shall be planted with native grasses. Proper landscape management is also required to ensure that the vegetation does not contribute to water pollution through pesticides, herbicides, or fertilizers. Landscaping shall be in accordance with County of Riverside Ordinance 859 and the District's *Basin Guidelines* (Appendix C), or other guidelines issued by the Engineering Authority.

Maintenance

Normal maintenance of an infiltration basin includes the maintenance of landscaping, debris and trash removal from the surface of the basin, and tending to problems associated with standing water (vectors, odors, etc.). Significant ponding, especially more than 72 hours after an event, may indicate that the basin surface is no longer providing sufficient infiltration and requires aeration. See the District's *Basin Guidelines* (Appendix C) for additional requirements (i.e., fencing, maintenance access, etc.).

Table 1 - Inspection and Maintenance

Schedule	Inspection and Maintenance Activity
Ongoing including just before annual storm seasons and following rainfall events.	• Maintain vegetation as needed. Use of fertilizers, pesticides and herbicides should be strenuously avoided to ensure they don't contribute to water pollution. If appropriate native plant selections and other IPM methods are used, such products shouldn't be needed. If such projects are used, o Products shall be applied in accordance with their labeling, especially in relation to application to water, and in areas subjected to flooding. o Fertilizers should not be applied within 15 days before, after, or during the rain season. • Remove debris and litter from the entire basin to minimize clogging and improve aesthetics. • Check for obvious problems and repair as needed. Address odor, insects, and overgrowth issues associated with stagnant or standing water in the basin bottom. There should be no long-term ponding water. • Check for erosion and sediment laden areas in the basin. Repair as needed. Clean forebay if needed. • Revegetate side slopes where needed.
Annually. If possible, schedule these inspections within 72 hours after a significant rainfall.	• Inspection of hydraulic and structural facilities. Examine the inlet for blockage, the embankment and spillway integrity, as well as damage to any structural element. • Check for erosion, slumping and overgrowth. Repair as needed. • Check basin depth for sediment build up and reduced total capacity. Scrape bottom as needed and remove sediment. Restore to original cross-section and infiltration rate. Replant basin vegetation. • Verify the basin bottom is allowing acceptable infiltration. Use a disc or other method to aerate basin bottom only if there is actual significant loss of infiltrative capacity, rather than on a routine basis[1]. • No water should be present 72 hours after an event. No long term standing water should be present at all. No algae formation should be visible. Correct problem as needed.

1. **CA Stormwater BMP Handbook for New Development and Significant Redevelopment**

Table 2 - Design and Sizing Criteria for Infiltration Basins

Design Parameter	Infiltration Basin
Design Volume	V_{BMP}
Forebay Volume	0.5% V_{BMP}
Drawdown time (maximum)	72 hours
Maximum tributary area	50 acres [2]
Minimum infiltration rate	Must be sufficient to drain the basin within the required Drawdown time over the life of the BMP. The WQMP may include specific requirements for minimum tested infiltration rates.
Maximum Depth	5 feet
Spillway erosion control	Energy dissipators to reduce velocities[1]
Basin Slope	0%
Freeboard (minimum)	1 foot [1]
Historic High Groundwater Setback (max)	10 feet
Bedrock/impermeable layer setback (max)	5 feet
Tree setbacks	Mature tree drip line must not overhang the basin
Set back from wells, tanks or springs	100 feet
Set back from foundations	As recommended in Geotechnical Report

1. **Ventura County's Technical Guidance Manual for Stormwater Quality Control Measures**
2. **CA Stormwater BMP Handbook for New Development and Significant Redevelopment**

Note: The information contained in this BMP Factsheet is intended to be a summary of design considerations and requirements. Additional information which applies to all detention basins may be found in the District's Basin Guidelines (Appendix C). In addition, information herein may be superseded by other guidelines issued by the co-permittee.

INFILTRATION BASIN SIZING PROCEDURE

1. Find the Design Volume, V_{BMP}.
   a) Enter the Tributary Area, $A_{T.}$
   b) Enter the Design Volume, V_{BMP}, determined from Section 2.1 of this Handbook.
2. Determine the Maximum Depth.
   a) Enter the infiltration rate. The infiltration rate shall be established as described in Appendix A: "Infiltration Testing".
   b) Enter the design Factor of Safety from Table 1 in Appendix A: "Infiltration Testing".
   c) The spreadsheet will determine D_1, the maximum allowable depth of the basin based on the infiltration rate along with the maximum drawdown time (72 hours) and the Factor of Safety.

$$D_1 = [(t) \times (I)] / 12s$$

Where I = site infiltration rate (in/hr)
s = safety factor
t = drawdown time (maximum 72 hours)

d) Enter the depth of freeboard.

e) Enter the depth to the historic high groundwater level measured from the top of the basin.

f) Enter the depth to the top of bedrock or other impermeable layer measured from the finished grade.

g) The spreadsheet will determine D_2, the total basin depth (including freeboard, if used) of the basin, based on restrictions to the depth by groundwater and an impermeable layer.

D_2 = Depth to groundwater – (10 + freeboard) (ft);

or

D_2 = Depth to impermeable layer – (5 + freeboard) (ft)

Whichever is least.

h) The spreadsheet will determine the maximum allowable effective depth of basin, D_{MAX}, based on the smallest value between D_1 and D_2. D_{MAX} is the maximum depth of water only and does not include freeboard. D_{MAX} shall not exceed 5 feet.

3. Basin Geometry

a) Enter the basin side slopes, z (no steeper than 4:1).

b) Enter the proposed basin depth, d_B excluding freeboard.

c) The spreadsheet will determine the minimum required surface area of the basin:

$$A_s = V_{BMP} / d_B$$

Where A_s = minimum area required (ft^2)
V_{BMP} = volume of the infiltration basin (ft^3)
d_B= proposed depth not to exceed maximum allowable depth, D_{MAX} (ft)

d) Enter the proposed bottom surface area. This area shall not be less than the minimum required surface area.

4. Forebay

A concrete forebay with a design volume of at least 0.5% V_{BMP} and a minimum 1 foot high concrete splashwall shall be provided. Full-height rectangular weir(s) shall be used to outlet the forebay. The weir(s) must be offset from the line of flow from the basin inlet. It is recommended that two weirs be used and that they be located on opposite sides of the forebay (see Figure 2).

a) The spreadsheet will determine the minimum required forebay volume based on 0.5% V_{BMP}.

b) Enter the proposed depth of the forebay berm/splashwall (1foot minimum).

c) The spreadsheet will determine the minimum required forebay surface area.

d) Enter the width of rectangular weir to be used (minimum 1.5 inches). Weir width should be established based on a 5 minute drawdown time.

Infiltration Basin TC-11



Design Considerations

- Soil for Infiltration
- Slope
- Aesthetics

Targeted Constituents

☑	Sediment	■
☑	Nutrients	■
☑	Trash	■
☑	Metals	■
☑	Bacteria	■
☑	Oil and Grease	■
☑	Organics	■

Legend ***(Removal Effectiveness)***

- ● Low
- ■ High
- ▲ Medium

Description

An infiltration basin is a shallow impoundment that is designed to infiltrate stormwater. Infiltration basins use the natural filtering ability of the soil to remove pollutants in stormwater runoff. Infiltration facilities store runoff until it gradually exfiltrates through the soil and eventually into the water table. This practice has high pollutant removal efficiency and can also help recharge groundwater, thus helping to maintain low flows in stream systems. Infiltration basins can be challenging to apply on many sites, however, because of soils requirements. In addition, some studies have shown relatively high failure rates compared with other management practices.

California Experience

Infiltration basins have a long history of use in California, especially in the Central Valley. Basins located in Fresno were among those initially evaluated in the National Urban Runoff Program and were found to be effective at reducing the volume of runoff, while posing little long-term threat to groundwater quality (EPA, 1983; Schroeder, 1995). Proper siting of these devices is crucial as underscored by the experience of Caltrans in siting two basins in Southern California. The basin with marginal separation from groundwater and soil permeability failed immediately and could never be rehabilitated.

Advantages

- Provides 100% reduction in the load discharged to surface waters.
- The principal benefit of infiltration basins is the approximation of pre-development hydrology during which a

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

significant portion of the average annual rainfall runoff is infiltrated and evaporated rather than flushed directly to creeks.

- If the water quality volume is adequately sized, infiltration basins can be useful for providing control of channel forming (erosion) and high frequency (generally less than the 2-year) flood events.

Limitations

- May not be appropriate for industrial sites or locations where spills may occur.
- Infiltration basins require a minimum soil infiltration rate of 0.5 inches/hour, not appropriate at sites with Hydrologic Soil Types C and D.
- If infiltration rates exceed 2.4 inches/hour, then the runoff should be fully treated prior to infiltration to protect groundwater quality.
- Not suitable on fill sites or steep slopes.
- Risk of groundwater contamination in very coarse soils.
- Upstream drainage area must be completely stabilized before construction.
- Difficult to restore functioning of infiltration basins once clogged.

Design and Sizing Guidelines

- Water quality volume determined by local requirements or sized so that 85% of the annual runoff volume is captured.
- Basin sized so that the entire water quality volume is infiltrated within 48 hours.
- Vegetation establishment on the basin floor may help reduce the clogging rate.

Construction/Inspection Considerations

- Before construction begins, stabilize the entire area draining to the facility. If impossible, place a diversion berm around the perimeter of the infiltration site to prevent sediment entrance during construction or remove the top 2 inches of soil after the site is stabililized. Stabilize the entire contributing drainage area, including the side slopes, before allowing any runoff to enter once construction is complete.
- Place excavated material such that it can not be washed back into the basin if a storm occurs during construction of the facility.
- Build the basin without driving heavy equipment over the infiltration surface. Any equipment driven on the surface should have extra-wide ("low pressure") tires. Prior to any construction, rope off the infiltration area to stop entrance by unwanted equipment.
- After final grading, till the infiltration surface deeply.
- Use appropriate erosion control seed mix for the specific project and location.

Performance

As water migrates through porous soil and rock, pollutant attenuation mechanisms include precipitation, sorption, physical filtration, and bacterial degradation. If functioning properly, this approach is presumed to have high removal efficiencies for particulate pollutants and moderate removal of soluble pollutants. Actual pollutant removal in the subsurface would be expected to vary depending upon site-specific soil types. This technology eliminates discharge to surface waters except for the very largest storms; consequently, complete removal of all stormwater constituents can be assumed.

There remain some concerns about the potential for groundwater contamination despite the findings of the NURP and Nightingale (1975; 1987a,b,c; 1989). For instance, a report by Pitt et al. (1994) highlighted the potential for groundwater contamination from intentional and unintentional stormwater infiltration. That report recommends that infiltration facilities not be sited in areas where high concentrations are present or where there is a potential for spills of toxic material. Conversely, Schroeder (1995) reported that there was no evidence of groundwater impacts from an infiltration basin serving a large industrial catchment in Fresno, CA.

Siting Criteria

The key element in siting infiltration basins is identifying sites with appropriate soil and hydrogeologic properties, which is critical for long term performance. In one study conducted in Prince George's County, Maryland (Galli, 1992), all of the infiltration basins investigated clogged within 2 years. It is believed that these failures were for the most part due to allowing infiltration at sites with rates of less than 0.5 in/hr, basing siting on soil type rather than field infiltration tests, and poor construction practices that resulted in soil compaction of the basin invert.

A study of 23 infiltration basins in the Pacific Northwest showed better long-term performance in an area with highly permeable soils (Hilding, 1996). In this study, few of the infiltration basins had failed after 10 years. Consequently, the following guidelines for identifying appropriate soil and subsurface conditions should be rigorously adhered to.

- Determine soil type (consider RCS soil type 'A, B or C' only) from mapping and consult USDA soil survey tables to review other parameters such as the amount of silt and clay, presence of a restrictive layer or seasonal high water table, and estimated permeability. The soil should not have more than 30% clay or more than 40% of clay and silt combined. Eliminate sites that are clearly unsuitable for infiltration.

- Groundwater separation should be at least 3 m from the basin invert to the measured ground water elevation. There is concern at the state and regional levels of the impact on groundwater quality from infiltrated runoff, especially when the separation between groundwater and the surface is small.

- Location away from buildings, slopes and highway pavement (greater than 6 m) and wells and bridge structures (greater than 30 m). Sites constructed of fill, having a base flow or with a slope greater than 15% should not be considered.

- Ensure that adequate head is available to operate flow splitter structures (to allow the basin to be offline) without ponding in the splitter structure or creating backwater upstream of the splitter.

- Base flow should not be present in the tributary watershed.

Secondary Screening Based on Site Geotechnical Investigation

- At least three in-hole conductivity tests shall be performed using USBR 7300-89 or Bouwer-Rice procedures (the latter if groundwater is encountered within the boring), two tests at different locations within the proposed basin and the third down gradient by no more than approximately 10 m. The tests shall measure permeability in the side slopes and the bed within a depth of 3 m of the invert.

- The minimum acceptable hydraulic conductivity as measured in any of the three required test holes is 13 mm/hr. If any test hole shows less than the minimum value, the site should be disqualified from further consideration.

- Exclude from consideration sites constructed in fill or partially in fill unless no silts or clays are present in the soil boring. Fill tends to be compacted, with clays in a dispersed rather than flocculated state, greatly reducing permeability.

- The geotechnical investigation should be such that a good understanding is gained as to how the stormwater runoff will move in the soil (horizontally or vertically) and if there are any geological conditions that could inhibit the movement of water.

Additional Design Guidelines

(1) Basin Sizing - The required water quality volume is determined by local regulations or sufficient to capture 85% of the annual runoff.

(2) Provide pretreatment if sediment loading is a maintenance concern for the basin.

(3) Include energy dissipation in the inlet design for the basins. Avoid designs that include a permanent pool to reduce opportunity for standing water and associated vector problems.

(4) Basin invert area should be determined by the equation:

$$A = \frac{WQV}{kt}$$

where A = Basin invert area (m^2)

WQV = water quality volume (m^3)

k = 0.5 times the lowest field-measured hydraulic conductivity (m/hr)

t = drawdown time (48 hr)

(5) The use of vertical piping, either for distribution or infiltration enhancement shall not be allowed to avoid device classification as a Class V injection well per 40 CFR146.5(e)(4).

Maintenance

Regular maintenance is critical to the successful operation of infiltration basins. Recommended operation and maintenance guidelines include:

- Inspections and maintenance to ensure that water infiltrates into the subsurface completely (recommended infiltration rate of 72 hours or less) and that vegetation is carefully managed to prevent creating mosquito and other vector habitats.
- Observe drain time for the design storm after completion or modification of the facility to confirm that the desired drain time has been obtained.
- Schedule semiannual inspections for beginning and end of the wet season to identify potential problems such as erosion of the basin side slopes and invert, standing water, trash and debris, and sediment accumulation.
- Remove accumulated trash and debris in the basin at the start and end of the wet season.
- Inspect for standing water at the end of the wet season.
- Trim vegetation at the beginning and end of the wet season to prevent establishment of woody vegetation and for aesthetic and vector reasons.
- Remove accumulated sediment and regrade when the accumulated sediment volume exceeds 10% of the basin.
- If erosion is occurring within the basin, revegetate immediately and stabilize with an erosion control mulch or mat until vegetation cover is established.
- To avoid reversing soil development, scarification or other disturbance should only be performed when there are actual signs of clogging, rather than on a routine basis. Always remove deposited sediments before scarification, and use a hand-guided rotary tiller, if possible, or a disc harrow pulled by a very light tractor.

Cost

Infiltration basins are relatively cost-effective practices because little infrastructure is needed when constructing them. One study estimated the total construction cost at about $2 per ft (adjusted for inflation) of storage for a 0.25-acre basin (SWRPC, 1991). As with other BMPs, these published cost estimates may deviate greatly from what might be incurred at a specific site. For instance, Caltrans spent about $18/ft^3 for the two infiltration basins constructed in southern California, each of which had a water quality volume of about 0.34 ac.-ft. Much of the higher cost can be attributed to changes in the storm drain system necessary to route the runoff to the basin locations.

Infiltration basins typically consume about 2 to 3% of the site draining to them, which is relatively small. Additional space may be required for buffer, landscaping, access road, and fencing. Maintenance costs are estimated at 5 to 10% of construction costs.

One cost concern associated with infiltration practices is the maintenance burden and longevity. If improperly maintained, infiltration basins have a high failure rate. Thus, it may be necessary to replace the basin with a different technology after a relatively short period of time.

References and Sources of Additional Information

Caltrans, 2002, BMP Retrofit Pilot Program Proposed Final Report, Rpt. CTSW-RT-01-050, California Dept. of Transportation, Sacramento, CA.

Galli, J. 1992. *Analysis of Urban BMP Performance and Longevity in Prince George's County, Maryland*. Metropolitan Washington Council of Governments, Washington, DC.

Hilding, K. 1996. Longevity of infiltration basins assessed in Puget Sound. *Watershed Protection Techniques* 1(3):124–125.

Maryland Department of the Environment (MDE). 2000. *Maryland Stormwater Design Manual*. http://www.mde.state.md.us/environment/wma/stormwatermanual. Accessed May 22, 2002.

Metzger, M. E., D. F. Messer, C. L. Beitia, C. M. Myers, and V. L. Kramer. 2002. The Dark Side Of Stormwater Runoff Management: Disease Vectors Associated With Structural BMPs. Stormwater 3(2): 24-39.

Nightingale, H.I., 1975, "Lead, Zinc, and Copper in Soils of Urban Storm-Runoff Retention Basins," American Water Works Assoc. Journal. Vol. 67, p. 443-446.

Nightingale, H.I., 1987a, "Water Quality beneath Urban Runoff Water Management Basins," Water Resources Bulletin, Vol. 23, p. 197-205.

Nightingale, H.I., 1987b, "Accumulation of As, Ni, Cu, and Pb in Retention and Recharge Basin Soils from Urban Runoff," Water Resources Bulletin, Vol. 23, p. 663-672.

Nightingale, H.I., 1987c, "Organic Pollutants in Soils of Retention/Recharge Basins Receiving Urban Runoff Water," Soil Science Vol. 148, pp. 39-45.

Nightingale, H.I., Harrison, D., and Salo, J.E., 1985, "An Evaluation Technique for Ground-water Quality Beneath Urban Runoff Retention and Percolation Basins," Ground Water Monitoring Review, Vol. 5, No. 1, pp. 43-50.

Oberts, G. 1994. Performance of Stormwater Ponds and Wetlands in Winter. *Watershed Protection Techniques* 1(2): 64–68.

Pitt, R., et al. 1994, *Potential Groundwater Contamination from Intentional and Nonintentional Stormwater Infiltration*, EPA/600/R-94/051, Risk Reduction Engineering Laboratory, U.S. EPA, Cincinnati, OH.

Schueler, T. 1987. *Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMPs*. Metropolitan Washington Council of Governments, Washington, DC.

Schroeder, R.A., 1995, *Potential For Chemical Transport Beneath a Storm-Runoff Recharge (Retention) Basin for an Industrial Catchment in Fresno, CA*, USGS Water-Resource Investigations Report 93-4140.

Southeastern Wisconsin Regional Planning Commission (SWRPC). 1991. *Costs of Urban Nonpoint Source Water Pollution Control Measures*. Southeastern Wisconsin Regional Planning Commission, Waukesha, WI.

U.S. EPA, 1983, *Results of the Nationwide Urban Runoff Program: Volume 1 – Final Report*, WH-554, Water Planning Division, Washington, DC.

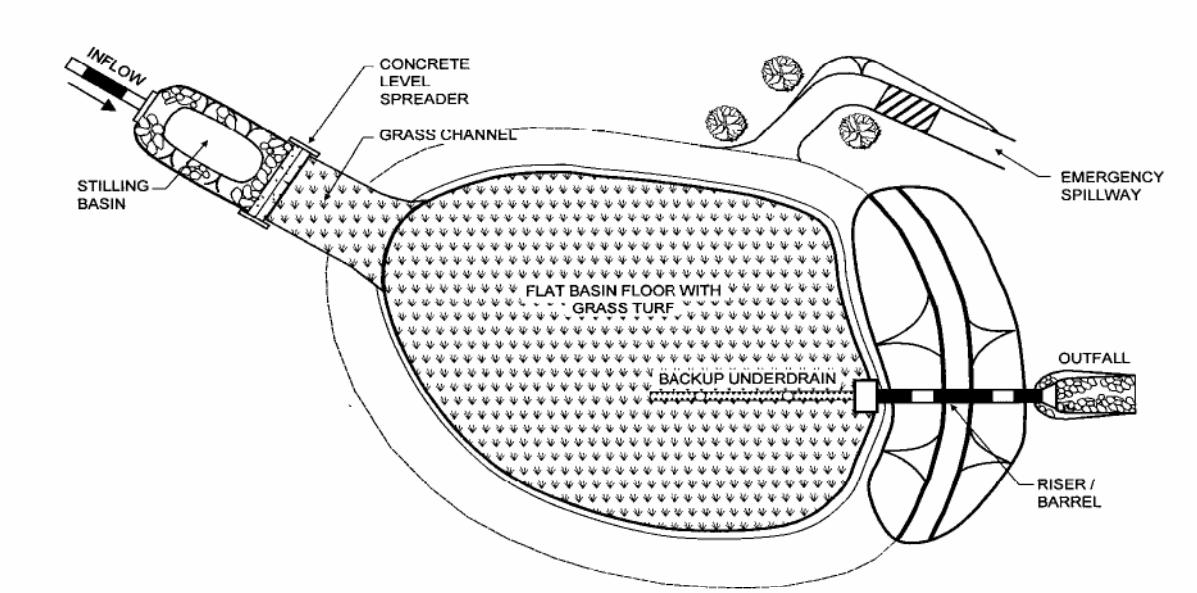
Watershed Management Institute (WMI). 1997. *Operation, Maintenance, and Management of Stormwater Management Systems*. Prepared for U.S. Environmental Protection Agency Office of Water, Washington, DC.

Information Resources

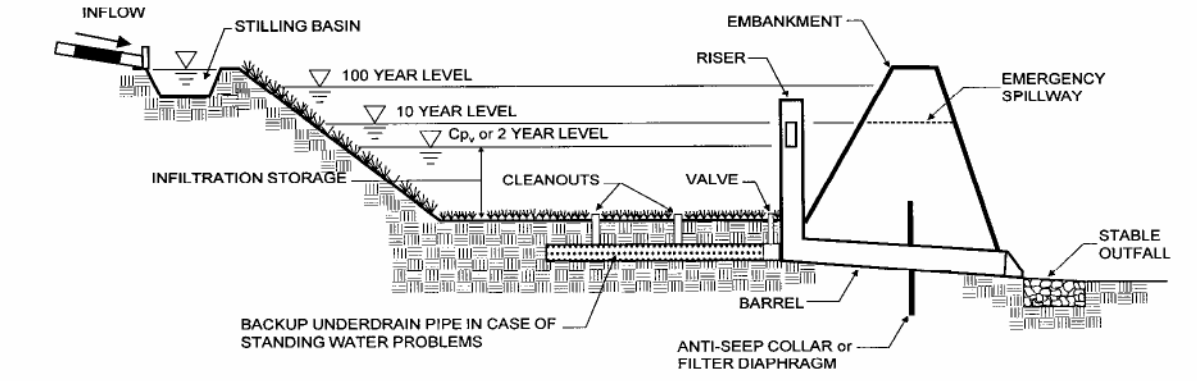
Center for Watershed Protection (CWP). 1997. *Stormwater BMP Design Supplement for Cold Climates*. Prepared for U.S. Environmental Protection Agency Office of Wetlands, Oceans and Watersheds. Washington, DC.

Ferguson, B.K., 1994. *Stormwater Infiltration*. CRC Press, Ann Arbor, MI.

USEPA. 1993. *Guidance to Specify Management Measures for Sources of Nonpoint Pollution in Coastal Waters*. EPA-840-B-92-002. U.S. Environmental Protection Agency, Office of Water, Washington, DC.



PLAN VIEW



PROFILE

Site Design & Landscape Planning SD-10



Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- ☑ Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Integrating and incorporating appropriate landscape planning methodologies into the project design is the most effective action that can be done to minimize surface and groundwater contamination from stormwater.

Approach

Landscape planning should couple consideration of land suitability for urban uses with consideration of community goals and projected growth. Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for site design and landscapes planning should conform to applicable standards and specifications of agencies with jurisdiction and be consistent with applicable General Plan and Local Area Plan policies.

Designing New Installations

Begin the development of a plan for the landscape unit with attention to the following general principles:

- Formulate the plan on the basis of clearly articulated community goals. Carefully identify conflicts and choices between retaining and protecting desired resources and community growth.
- Map and assess land suitability for urban uses. Include the following landscape features in the assessment: wooded land, open unwooded land, steep slopes, erosion-prone soils, foundation suitability, soil suitability for waste disposal, aquifers, aquifer recharge areas, wetlands, floodplains, surface waters, agricultural lands, and various categories of urban land use. When appropriate, the assessment can highlight outstanding local or regional resources that the community determines should be protected (e.g., a scenic area, recreational area, threatened species habitat, farmland, fish run). Mapping and assessment should recognize not only these resources but also additional areas needed for their sustenance.

Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Conserve Natural Areas during Landscape Planning

If applicable, the following items are required and must be implemented in the site layout during the subdivision design and approval process, consistent with applicable General Plan and Local Area Plan policies:

- Cluster development on least-sensitive portions of a site while leaving the remaining land in a natural undisturbed condition.
- Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allow access, and provide fire protection.
- Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.
- Promote natural vegetation by using parking lot islands and other landscaped areas.
- Preserve riparian areas and wetlands.

Maximize Natural Water Storage and Infiltration Opportunities Within the Landscape Unit

- Promote the conservation of forest cover. Building on land that is already deforested affects basin hydrology to a lesser extent than converting forested land. Loss of forest cover reduces interception storage, detention in the organic forest floor layer, and water losses by evapotranspiration, resulting in large peak runoff increases and either their negative effects or the expense of countering them with structural solutions.
- Maintain natural storage reservoirs and drainage corridors, including depressions, areas of permeable soils, swales, and intermittent streams. Develop and implement policies and

regulations to discourage the clearing, filling, and channelization of these features. Utilize them in drainage networks in preference to pipes, culverts, and engineered ditches.

- Evaluating infiltration opportunities by referring to the stormwater management manual for the jurisdiction and pay particular attention to the selection criteria for avoiding groundwater contamination, poor soils, and hydrogeological conditions that cause these facilities to fail. If necessary, locate developments with large amounts of impervious surfaces or a potential to produce relatively contaminated runoff away from groundwater recharge areas.

Protection of Slopes and Channels during Landscape Design

- Convey runoff safely from the tops of slopes.
- Avoid disturbing steep or unstable slopes.
- Avoid disturbing natural channels.
- Stabilize disturbed slopes as quickly as possible.
- Vegetate slopes with native or drought tolerant vegetation.
- Control and treat flows in landscaping and/or other controls prior to reaching existing natural drainage systems.
- Stabilize temporary and permanent channel crossings as quickly as possible, and ensure that increases in run-off velocity and frequency caused by the project do not erode the channel.
- Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.
- Line on-site conveyance channels where appropriate, to reduce erosion caused by increased flow velocity due to increases in tributary impervious area. The first choice for linings should be grass or some other vegetative surface, since these materials not only reduce runoff velocities, but also provide water quality benefits from filtration and infiltration. If velocities in the channel are high enough to erode grass or other vegetative linings, riprap, concrete, soil cement, or geo-grid stabilization are other alternatives.
- Consider other design principles that are comparable and equally effective.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Redevelopment may present significant opportunity to add features which had not previously been implemented. Examples include incorporation of depressions, areas of permeable soils, and swales in newly redeveloped areas. While some site constraints may exist due to the status of already existing infrastructure, opportunities should not be missed to maximize infiltration, slow runoff, reduce impervious areas, disconnect directly connected impervious areas.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Stormwater Management Manual for Western Washington, Washington State Department of Ecology, August 2001.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Roof Runoff Controls SD-11



Rain Garden

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Description

Various roof runoff controls are available to address stormwater that drains off rooftops. The objective is to reduce the total volume and rate of runoff from individual lots, and retain the pollutants on site that may be picked up from roofing materials and atmospheric deposition. Roof runoff controls consist of directing the roof runoff away from paved areas and mitigating flow to the storm drain system through one of several general approaches: cisterns or rain barrels; dry wells or infiltration trenches; pop-up emitters, and foundation planting. The first three approaches require the roof runoff to be contained in a gutter and downspout system. Foundation planting provides a vegetated strip under the drip line of the roof.

Approach

Design of individual lots for single-family homes as well as lots for higher density residential and commercial structures should consider site design provisions for containing and infiltrating roof runoff or directing roof runoff to vegetative swales or buffer areas. Retained water can be reused for watering gardens, lawns, and trees. Benefits to the environment include reduced demand for potable water used for irrigation, improved stormwater quality, increased groundwater recharge, decreased runoff volume and peak flows, and decreased flooding potential.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Designing New Installations

Cisterns or Rain Barrels

One method of addressing roof runoff is to direct roof downspouts to cisterns or rain barrels. A cistern is an above ground storage vessel with either a manually operated valve or a permanently open outlet. Roof runoff is temporarily stored and then released for irrigation or infiltration between storms. The number of rain

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

barrels needed is a function of the rooftop area. Some low impact developers recommend that every house have at least 2 rain barrels, with a minimum storage capacity of 1000 liters. Roof barrels serve several purposes including mitigating the first flush from the roof which has a high volume, amount of contaminants, and thermal load. Several types of rain barrels are commercially available. Consideration must be given to selecting rain barrels that are vector proof and childproof. In addition, some barrels are designed with a bypass valve that filters out grit and other contaminants and routes overflow to a soak-away pit or rain garden.

If the cistern has an operable valve, the valve can be closed to store stormwater for irrigation or infiltration between storms. This system requires continual monitoring by the resident or grounds crews, but provides greater flexibility in water storage and metering. If a cistern is provided with an operable valve and water is stored inside for long periods, the cistern must be covered to prevent mosquitoes from breeding.

A cistern system with a permanently open outlet can also provide for metering stormwater runoff. If the cistern outlet is significantly smaller than the size of the downspout inlet (say ¼ to ½ inch diameter), runoff will build up inside the cistern during storms, and will empty out slowly after peak intensities subside. This is a feasible way to mitigate the peak flow increases caused by rooftop impervious land coverage, especially for the frequent, small storms.

Dry wells and Infiltration Trenches

Roof downspouts can be directed to dry wells or infiltration trenches. A dry well is constructed by excavating a hole in the ground and filling it with an open graded aggregate, and allowing the water to fill the dry well and infiltrate after the storm event. An underground connection from the downspout conveys water into the dry well, allowing it to be stored in the voids. To minimize sedimentation from lateral soil movement, the sides and top of the stone storage matrix can be wrapped in a permeable filter fabric, though the bottom may remain open. A perforated observation pipe can be inserted vertically into the dry well to allow for inspection and maintenance.

In practice, dry wells receiving runoff from single roof downspouts have been successful over long periods because they contain very little sediment. They must be sized according to the amount of rooftop runoff received, but are typically 4 to 5 feet square, and 2 to 3 feet deep, with a minimum of 1-foot soil cover over the top (maximum depth of 10 feet).

To protect the foundation, dry wells must be set away from the building at least 10 feet. They must be installed in solids that accommodate infiltration. In poorly drained soils, dry wells have very limited feasibility.

Infiltration trenches function in a similar manner and would be particularly effective for larger roof areas. An infiltration trench is a long, narrow, rock-filled trench with no outlet that receives stormwater runoff. These are described under Treatment Controls.

Pop-up Drainage Emitter

Roof downspouts can be directed to an underground pipe that daylights some distance from the building foundation, releasing the roof runoff through a pop-up emitter. Similar to a pop-up irrigation head, the emitter only opens when there is flow from the roof. The emitter remains flush to the ground during dry periods, for ease of lawn or landscape maintenance.

Foundation Planting

Landscape planting can be provided around the base to allow increased opportunities for stormwater infiltration and protect the soil from erosion caused by concentrated sheet flow coming off the roof. Foundation plantings can reduce the physical impact of water on the soil and provide a subsurface matrix of roots that encourage infiltration. These plantings must be sturdy enough to tolerate the heavy runoff sheet flows, and periodic soil saturation.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Supplemental Information

Examples

- City of Ottawa's Water Links Surface –Water Quality Protection Program
- City of Toronto Downspout Disconnection Program
- City of Boston, MA, Rain Barrel Demonstration Program

Other Resources

Hager, Marty Catherine, Stormwater, "Low-Impact Development", January/February 2003. www.stormh2o.com

Low Impact Urban Design Tools, Low Impact Development Design Center, Beltsville, MD. www.lid-stormwater.net

Start at the Source, Bay Area Stormwater Management Agencies Association, 1999 Edition

Efficient Irrigation SD-12



Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Irrigation water provided to landscaped areas may result in excess irrigation water being conveyed into stormwater drainage systems.

Approach

Project plan designs for development and redevelopment should include application methods of irrigation water that minimize runoff of excess irrigation water into the stormwater conveyance system.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Designing New Installations

The following methods to reduce excessive irrigation runoff should be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.
- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Implement landscape plans consistent with County or City water conservation resolutions, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the storm water drainage system.
- Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider design features such as:
  - Using mulches (such as wood chips or bar) in planter areas without ground cover to minimize sediment in runoff
  - Installing appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant materials where possible and/or as recommended by the landscape architect
  - Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible
  - Choosing plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth
- Employ other comparable, equally effective methods to reduce irrigation water runoff.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Storm Drain Signage SD-13



Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include "NO DUMPING

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

– DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.
- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern

- Development of the site is anticipated to both increase the storm run-off volume and decrease the time of concentration. 'Hydromodification' will be addressed by mimicking the pre-development hydrograph with the post-development hydrograph for the 2-year, 24-hour return frequency storm. By sizing the infiltration basin to capture and detain the largest storm volume increase, the basin will then be able address hydromodification by slowly metering out the retained volume at a flow rate less than or equal to the pre-development condition flow rates. As stated within the Hydrology Analysis prepared for the site (provided herein), the largest storm volume increase was experienced during the 10 year 24 hour storm event, where the anticipated run-off increased by 2.7 acre feet from the natural condition. Therefore, the infiltration basin will be preliminarily sized to retain 2.7 acre feet above. Basin routing and outlet structure details will be provided upon final engineering.

  .

PRELIMINARY HYDROLOGY ANALYSIS
Tentative Tract Map 37788
Bedford Commercial Site

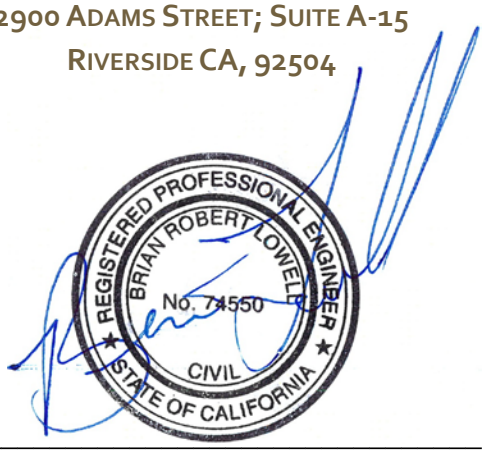
FOR

GUARDIAN CAPITAL
5780 FLEET STREET, SUITE 225
CARLSBAD, CA 92008

CITY OF CORONA
COUNTY OF RIVERSIDE
CALIFORNIA

PREPARED BY:

HUNSAKER & ASSOCIATES
IRVINE, INC.
PLANNING ▪ ENGINEERING ▪ SURVEYING
2900 ADAMS STREET; SUITE A-15
RIVERSIDE CA, 92504



Brian R. Lowell, R.C.E. 74550

November 2019

W.O. # 2749-18

SECTION 1 - Summary

Introduction

The purpose of this report is to present the backup hydrology and hydraulics that will be used for the final engineering portion of Bedford Commercial Site of the Bedford project in the City of Corona. Furthermore, this report is supplemental to the previous overall *"Hydrology Study for Tract 36294"* prepared by Hunsaker & Associates in April 2017, as well as the *"Master Drainage Plan for Tract 36294 – Mass-Grading"* by CASC Engineering dated December 2015. Please refer to these reports for analysis pertaining to mitigation and basin sizing.

The proposed commercial development is located in the southeastern portion of the City of Corona, Riverside County, California on a portion of the 276 acre parcel owned by Guardian Capital. The original commercial phase of the project consisted of approximately 10.03 acres of the 276 acre site, located on the northern most portion of the overall project. The proposed development expands the commercial site northeasterly, adding an additional 17.85 acres. The total combined lot area is 27.88 acres with development occurring on 23.5 acres. Development of this site will require the preparation of a new tentative tract map, TTM 37788. The commercial phase of the Bedford project is bounded by Eagle Glen Parkway to the north, Bedford Canyon Road to the west, Hudson House Drive (proposed) to the south and Interstate 15 to the east. Generally, the project is situated west of Interstate 15 and south of Eagle Glen Parkway as shown on the included vicinity map.

Existing Conditions

The project site, TTM 37788, consists of vacant undeveloped land. This area is comprised of various soil types, as is shown on the included soils map. The site is situated within the Bedford Wash / Temescal Wash sub-watershed portion of the Santa Ana River watershed. Furthermore, the project lies along the northerly banks of Bedford Canyon Wash. The topography of the site is typical of the Corona Valley in that it exhibits gently rolling topography with elevations ranging from approximately 900 feet to 1,150 feet above mean sea level.

Proposed Drainage Facilities

The proposed development, TTM 37788, divides the site into two onsite drainage areas "A" and "B". Drainage management area 'A' consists of southwesterly most 10.8 acres. Run-off from DMA 'A' is collected by a series of private catch basins which are connected to a private storm drain system within the commercial site, flowing easterly. Ultimately connecting to the existing backbone storm drain system within Bedford Canyon Road at its interstation with the Lift Station access road. All run-off from DMA 'A' has already been accounted for in the overall hydrology master drainage plan for Tract 36294. The existing infiltration basin has been designed to accommodate these flows, no additional mitigation measures are required.

Similarly, drainage management area 'B' consists of 15.7 acres that are adjacent to Tract 36294. Run-off from DMA 'B' is collected by a series of private catch basins which are connected to the private storm drain system flowing southeasterly towards and into a proposed water quality infiltration basin located in the southeastern portion of the site.

All flows generated from the commercial phase will eventually be conveyed to Bedford Canyon Wash, where it will follow the path of the Santa Ana Watershed towards the Pacific Ocean.

The backbone facilities for DMA 'A" have been designed to convey the 100-year storm event (see previous master drainage studies), we have analyzed the proposed improvements associated with the commercial phase based on the developed conditions for the 2-year, 10-year, and 100-year storm events. RCFC&WCD rational method was utilized to determine developed flow rates.

The proposed facilities for DMA 'B' are designed to convey the 100-year storm event, we have analyzed the site based on the pre and post development conditions for the 2-year, 10-year, and 100-year storm events. RCFC&WCD rational and unit hydrograph methodologies were utilized to determine pre and post development flow rates. The results of this analysis are summarized in the following tables.

Drainage Management Area 'B'

All storm run-off from the developed areas within DMA 'B' drain to the proposed water quality basin located in the southeastern portion of the site. Any water discharged from the site will be directed via underground storm drain pipes and outlet into Bedford Canyon Wash, where it will follow the path of the Santa Ana River Watershed towards the Pacific Ocean.

The proposed development will increase the peak flow rate and volume of storm water run-off, the largest peak flow rate increase was experienced during the 2 year 1 hour storm event, where the anticipated flow rate increased by 5.1 cfs, as compared to natural condition. This increase is being mitigated by the proposed bio-retention / detention basin located on the eastern portion of the site. Basin routing calculations will be provided during the final engineering.

DMA 'B' - UNIT HYDROGRAPH - PEAK FLOW RATE (cfs)						
	2 YEAR		10 YEAR		100 YEAR	
	EXISTING	DEVELOPED	EXISTING	DEVELOPED	EXISTING	DEVELOPED
1 HOUR	8.4	13.5	21.9	25.1	40.5	41.7
3 HOUR	4.6	9.4	15.3	17.7	29.5	30.0
6 HOUR	3.7	8.8	11.8	14.7	22.5	23.4
24 HOUR	0.5	3.5	5.2	6.8	14.5	13.6

The largest storm volume increase was experienced during the 10 year 24 hour storm event, where the anticipated run-off is increased by 2.7 acre feet from the natural condition. This increase is being mitigated by the proposed infiltration/detention basin located on the southeast corner of the site.

DMA 'B' - UNIT HYDROGRAPH – STORM VOLUME (ac-ft)						
	2 YEAR		10 YEAR		100 YEAR	
	EXISTING	DEVELOPED	EXISTING	DEVELOPED	EXISTING	DEVELOPED
1 HOUR	0.2	0.5	0.7	0.9	1.7	1.5
3 HOUR	0.2	0.9	0.9	1.5	2.5	2.5
6 HOUR	0.2	1.2	0.8	1.8	2.5	2.8
24 HOUR	0.3	2.1	1.4	4.1	6.0	7.4

Hydromodification (Hydraulic Condition of Concern ~ H.C.O.C.)

Development of the site is anticipated to both increase the storm run-off volume and decrease the time of concentration. 'Hydromodification' will be addressed by mimicking the pre-development hydrograph with the post-development hydrograph for the 2-year, 24-hour return frequency storm. By sizing the infiltration basin to capture and detain the largest storm volume increase, the basin will then be able address hydromodification by slowly metering out the retained volume at a flow rate less than or equal to the pre-development condition flow rates. As stated previously, the largest storm volume increase was experienced during the 10 year 24 hour storm event, where the anticipated run-off increased by 2.7 acre feet from the natural condition. Therefore, the infiltration basin will be preliminarily sized to retain 2.7 acre feet above. Basin routing and outlet structure details will be provided upon final engineering.

Methodology

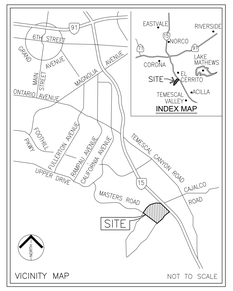
This hydrology report is to be used only to analyze flow to, through, and out of the site using the Riverside County Rational Method. In regard to pipe sizing, the hydrology programs were utilized only as a tool for obtaining preliminary sizing of the storm drain facilities by allowing the program to determine minimum pipe sizes. The actual storm drain system and pipe sizes shall be designed per Riverside County Flood Control District criteria during final engineering. Civil Design Version 7.0 Computer Software Program and AES Engineering Software 2011 version were used in generating the hydrological and hydraulic analysis for this report.

Conclusion

Based upon the results of this preliminary report, it is expected that drainage facilities discussed above will adequately protect the site area from flood damage associated with the 100-year storm event. The proposed facilities, with ultimate development and adequate maintenance, will convey flows safely through the site area in accordance with Riverside County requirements.

LEGEND

- MAJOR DRAINAGE BOUNDARY
- MINOR DRAINAGE BOUNDARY
- DRAINAGE COURSE FLOWLINE
- TRACT BOUNDARY
- B / C — SOILS GROUP AND BOUNDARY
- 403 / 1262 — NODE NUMBER / NODE ELEVATION
- D-9 / 5.08 — AREA DESIGNATION / AREA ACREAGE (IN ACRES)
- Q_{10} =40.5 cfs / Q_{100}=72.8 cfs / Tc=11.8 MIN. / INV=x — 10 YEAR STORM FLOW / 100 YEAR STORM FLOW / TIME OF CONCENTRATION (Q100) / INVERT ELEVATION
- ΣQ_{10} =40.5 cfs / ΣQ_{100}=72.8 cfs / Tc=11.8 MIN. / INV=x — 10 YEAR STORM FLOW CONFLUENCE / 100 YEAR STORM FLOW CONFLUENCE / TIME OF CONCENTRATION (Q100) / INVERT ELEVATION
- **AREA "B"** — AREA DESIGNATION
- LL — LONGEST LENGTH OF FLOW
- LC — LENGTH TO CENTROID
- CENTROID



INTERSTATE 15

CALTRANS R/W

202 / 895.0 — Q_{10} =14.7 cfs / Q_{100}=29.5 cfs / Tc=21.6 MIN.

L=1,091'

B-2 / 10.07

LL=1,928' Lc=884'

201 / 905.0 — Q_{10} =6.1 cfs / Q_{100}=12.0 cfs / Tc=14.9 MIN.

B-1 / 5.63

L=837'

200 / 910.0

EAGLE GLEN PARKWAY

TR 36294 LOT 8
SEE 2017 ANALYSIS FOR TR 36294
INCLUDED IN APPENDIX 4

LOT 8 TRACT 36294

LOT 9 TRACT 36294

LOT 10 TRACT 36294

LOT 11 TRACT 36294

LOT 12 TRACT 36294

LOT D TRACT 36294

LOT 12 ADJUSTMENT BOUNDARY PER BOUNDARY ADJUSTMENT NO. 0-0-0-0

LOT 12 ADJUSTMENT BOUNDARY PER BOUNDARY ADJUSTMENT NO. 0-0-0-0

BEDFORD CANYON ROAD

DWY 29

DWY 5

DWY 1

DWY 11

DWY 10

1" = 50'
25 0 50

PREPARED BY:
HUNSAKER & ASSOCIATES
IRVINE, INC
INLAND EMPIRE REGION
2900 ADAMS STREET, SUITE A-15
RIVERSIDE CA 92504 (951)352-7200
PLANNING/ENGINEERING/SURVEYING/GOVERNMENT RELATIONS

PRELIMINARY HYDROLOGY MAP
BEDFORD COMMERECIAL SITE
EXISTING CONDITION
TENTATIVE TRACT MAP 37788

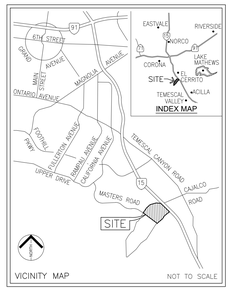
NOVEMBER 2019

PLOTTED ON: December 5, 2016

H:\00539\Engineering\Hydrology\Commercial Site\Plans\Map\00539-Commercial-Site-Hydr-Ex.dwg

LEGEND

- MAJOR DRAINAGE BOUNDARY
- MINOR DRAINAGE BOUNDARY
- DRAINAGE COURSE FLOWLINE
- TRACT BOUNDARY
- SOILS GROUP AND BOUNDARY
- NODE NUMBER
- NODE ELEVATION
- AREA DESIGNATION
- AREA ACREAGE (IN ACRES)
- Q_{10} =40.5 cfs / Q_{100}=72.8 cfs / Tc=11.8 MIN. / INV=x — 10 YEAR STORM FLOW / 100 YEAR STORM FLOW / TIME OF CONCENTRATION (Q100) / INVERT ELEVATION
- ΣQ_{10} =40.5 cfs / ΣQ_{100}=72.8 cfs / Tc=11.8 MIN. / INV=x — 10 YEAR STORM FLOW CONFLUENCE / 100 YEAR STORM FLOW CONFLUENCE / TIME OF CONCENTRATION (Q100) / INVERT ELEVATION
- **AREA "B"** — AREA DESIGNATION
- LL — LONGEST LENGTH OF FLOW
- LC — LENGTH TO CENTROID
- CENTROID



INTERSTATE 15

CALTRANS R/W

EAGLE GLEN PARKWAY / CAJALCO ROAD

BEDFORD CANYON ROAD

BASIN
TOP: 918 (4.6 AC.)
BOTTOM: 905 (3.0 AC.)
(2' FREEBOARD)
(79,979 CYS)

PAD ELEV.=924.0

FUTURE SCE SWITCH STATION

24' EMERGENCY ACCESS

BASIN/LIFT STATION ACCESS

LIFT STATION

PARCEL 6

LOT 8 TRACT 36666

LOT 9 TRACT 36666

LOT 10 TRACT 36666

LOT LINE ADJUSTMENT 15-001 REC'D 2/26/2016, DOC. #2016-0074775, RECDS. OF RIVCO.

P=930.7 | P=932.3 | P=926.4 | P=923.7 | P=922.4 | P=921.4 | P=922.6 | P=924.3 | P=927.0 | P=929.0 | P=925.9

100 933.0	101 929.7	102 927.2	103 929.5	104 927.2	105 924.7	106 926.8	107 924.7	108 921.5	109 923.1	110 921.5	111 913.5	112 908.4
201 926.8	202 923.0	203 923.2	204 920.7	205 920.8	206 919.7	207 926.5	208 924.0	209 921.5	210 922.5	211 921.6	212 918.5	213 921.5
214 918.7	215 916.8	216 922.5	217 920.1	218 917.8	219 917.8	220 916.8	221 895.0					

A-1 2.23	A-2 2.01	A-3 3.12	A-4 2.29	B-1 1.72	B-2 1.95	B-3 1.42	B-4 1.10	B-5 1.69	B-6 2.30	B-7 0.51	B-8 0.83	B-9 0.87
B-10 1.44												

Q_{10} =3.1 cfs, Q_{100}=5.0 cfs, Tc=9.0 MIN., INV=920.8
Q_{10} =4.1 cfs, Q_{100}=6.7 cfs, Tc=8.4 MIN., INV=923.0
Q_{10} =3.9 cfs, Q_{100}=6.3 cfs, Tc=7.5 MIN., INV=921.2
Q_{10} =2.2 cfs, Q_{100}=3.6 cfs, Tc=6.8 MIN., INV=920.0
Q_{10} =1.2 cfs, Q_{100}=1.9 cfs, Tc=5.0 MIN., INV=914.1
ΣQ_{10} =7.7 cfs, ΣQ_{100}=12.4 cfs, Tc=9.2 MIN., INV=921.0
ΣQ_{10} =12.8 cfs, ΣQ_{100}=20.9 cfs, Tc=10.0 MIN., INV=918.5
ΣQ_{10} =6.1 cfs, ΣQ_{100}=10.0 cfs, Tc=8.8 MIN., INV=917.0
ΣQ_{10} =8.6 cfs, ΣQ_{100}=14.0 cfs, Tc=9.4 MIN., INV=914.7
Q_{10} =3.5 cfs, Q_{100}=5.7 cfs, Tc=8.7 MIN., INV=917.3
Q_{10} =2.8 cfs, Q_{100}=4.5 cfs, Tc=7.4 MIN., INV=915.0
ΣQ_{10} =13.5 cfs, ΣQ_{100}=22.0 cfs, Tc=10.2 MIN., INV=911.3
ΣQ_{10} =17.3 cfs, ΣQ_{100}=28.2 cfs, Tc=10.4 MIN., INV=910.0
Q_{10} =3.3 cfs, Q_{100}=5.3 cfs, Tc=7.4 MIN., INV=915.6
Q_{10} =4.4 cfs, Q_{100}=7.1 cfs, Tc=7.8 MIN., INV=913.7
ΣQ_{10} =2.7 cfs, ΣQ_{100}=4.4 cfs, Tc=7.5 MIN., INV=911.8
Q_{10} =1.6 cfs, Q_{100}=2.6 cfs, Tc=7.5 MIN., INV=912.0
ΣQ_{10} =5.5 cfs, ΣQ_{100}=8.9 cfs, Tc=7.5 MIN., INV=915.5
Q_{10} =1.7 cfs, Q_{100}=2.7 cfs, Tc=7.6 MIN., INV=911.0
ΣQ_{10} =21.1 cfs, ΣQ_{100}=34.4 cfs, Tc=10.7 MIN., INV=908.3
ΣQ_{10} =23.4 cfs, ΣQ_{100}=38.2 cfs, Tc=10.8 Min.
Q_{10} =21.1 cfs, Q_{100}=34.4 cfs, Tc=10.7 MIN., INV=895.0
Q_{10} =4.0 cfs, Q_{100}=6.5 cfs, Tc=8.3 MIN., INV=915.5
ΣQ_{10} =16.6 cfs, ΣQ_{100}=27.1 cfs, Tc=10.8 MIN., INV=915.0
Q_{10} =16.6 cfs, Q_{100}=27.1 cfs, Tc=11.2 MIN., INV=913.5
Q_{10} =16.6 cfs, Q_{100}=27.1 cfs, Tc=11.1 MIN., INV=908.4

Lp=271' | L=247' | L=480' | L=414' | L=263' | L=437' | L=386' | L=1209' | L=203' | Lp=177' | Lp=126' | Lp=169' | Lp=140' | Lp=112' | Lp=335' | L=322' | Lp=315' | L=282' | Lp=247' | L=218' | Lp=15' | Lp=18' | Lp=20' | Lp=26' | Lp=242' | L=275' | Lp=18' | Lp=414' | Lp=10' | Lp=260' | Lp=382' | Lp=307' | Lp=22' | Lp=195' | Lp=62'

1% | 2% | 4% | 5% | 6% | 7% | 8% | 9% | 10% | 11% | 12% | 13% | 14% | 15% | 16% | 17% | 18% | 19% | 20% | 21% | 22% | 23% | 24% | 25% | 26% | 27% | 28% | 29% | 30% | 31% | 32% | 33% | 34% | 35% | 36% | 37% | 38% | 39% | 40% | 41% | 42% | 43% | 44% | 45% | 46% | 47% | 48% | 49% | 50%

2:1 | 4:1

900.0 TB

N E S W

1" = 50'
25 0 50

PREPARED BY:
HUNSAKER & ASSOCIATES
IRVINE, INC
INLAND EMPIRE REGION
2900 ADAMS STREET, SUITE A-15
RIVERSIDE CA 92504 (951)352-7200
PLANNING/ENGINEERING/SURVEYING/GOVERNMENT RELATIONS

PRELIMINARY HYDROLOGY MAP
BEDFORD COMMERECIAL SITE
PROPOSED DEVELOPMENT
TENTATIVE TRACT MAP 37788

NOVEMBER 2019

H:\30539\Engineering\Hydrology\Commercial Site\Plots\Maps\30539-Commercial Site-Hyd-Tr.dwg

PLOTTED ON: December 5, 2016

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

Appendix 8
STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

How to use this worksheet (also see instructions in Section H of the 2018 SMR WQMP Template):

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies.
2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your WQMP Exhibit.
3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs in your WQMP. Use the format shown in Table H.1 of this WQMP Template. Describe your specific BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting BMPs or substituting alternative BMPs for those shown here.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	**... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE**		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☑ **A.** On-site storm drain inlets	☑ Locations of inlets.	☑ Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.	☑ Maintain and periodically repaint or replace inlet markings. ☑ Provide stormwater pollution prevention information to new site owners, lessees, or operators. ☑ See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com ☑ Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."
☑ **B.** Interior floor drains and elevator shaft sump pumps		☑ State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	☑ Inspect and maintain drains to prevent blockages and overflow.
☐ **C.** Interior parking garages		☐ State that parking garage floor drains will be plumbed to the sanitary sewer.	☐ Inspect and maintain drains to prevent blockages and overflow.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☐ **D1.** Need for future indoor & structural pest control		☐ Note building design features that discourage entry of pests.	☐ Provide Integrated Pest Management information to owners, lessees, and operators.
☑ **D2.** Landscape/ Outdoor Pesticide Use	☑ Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained. ☑ Show self-retaining landscape areas, if any. ☑ Show stormwater treatment and hydrograph modification management BMPs.	State that final landscape plans will accomplish all of the following. ☑ Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. ☑ Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. ☑ Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. ☐ Consider using pest-resistant plants, especially adjacent to hardscape. To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	☑ Maintain landscaping using minimum or no pesticides. ☑ See applicable operational BMPs in "What you should know for…..Landscape and Gardening" at: http://www.rcwatershed.org/about/materials-library/#1450469138395-bb76dd39-d810 ☑ Provide IPM information to new owners, lessees and operators.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on WQMP Drawings**	3 **Permanent Controls—List in WQMP Table and Narrative**	4 **Operational BMPs—Include in WQMP Table and Narrative**
☑ **E.** Pools, spas, ponds, decorative fountains, and other water features.	☑ Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet. (Exception: Public pools must be plumbed according to County Department of Environmental Health Guidelines.)	If the Co-Permittee requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.	☑ See applicable operational BMPs in "Guidelines for Maintaining Your Swimming Pool, Jacuzzi and Garden Fountain" at: http://www.rcwatershed.org/about/materials-library/#1450469201433-f5f358c9-6008
☑ **F.** Food service	☑ For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment. ☑ On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.	☑ Describe the location and features of the designated cleaning area. ☑ Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.	☑ See the brochure, "The Food Service Industry Best Management Practices for: Restaurants, Grocery Stores, Delicatessens and Bakeries" at http://www.rcwatershed.org/about/materials-library/#1450389926766-61e8af0b-53a9 Provide this brochure to new site owners, lessees, and operators.
☑ **G.** Refuse areas	☑ Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas. ☑ If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area. ☑ Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.	☑ State how site refuse will be handled and provide supporting detail to what is shown on plans. ☑ State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	☑ State how the following will be implemented: Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
❑ **H.** Industrial processes.	❑ Show process area.	❑ If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."	❑ See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com See the brochure "Industrial & Commercial Facilities Best Management Practices for: Industrial, Commercial Facilities" at; http://www.rcwatershed.org/about/materials-library/#1450389926766-61e8af0b-53a9
❑ **I.** Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)	❑ Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area. ❑ Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. ❑ Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.	❑ Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains. Where appropriate, reference documentation of compliance with the requirements of Hazardous Materials Programs for: ▪ Hazardous Waste Generation ▪ Hazardous Materials Release Response and Inventory ▪ California Accidental Release (CalARP) ▪ Aboveground Storage Tank ▪ Uniform Fire Code Article 80 Section 103(b) & (c) 1991 ▪ Underground Storage Tank www.cchealth.org/groups/hazmat/	❑ See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
❑ **J.** Vehicle and Equipment Cleaning	❑ Show on drawings as appropriate: (1) Commercial/industrial facilities having vehicle/equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses. (2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use). (3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer. (4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.	❑ If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced.	Describe operational measures to implement the following (if applicable): ❑ Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system. Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at: http://www.rcwatershed.org/about/materials-library/#1450389926766-61e8af0b-53a9 ❑ Car dealerships and similar may rinse cars with water only.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on WQMP Drawings**	3 **Permanent Controls—List in WQMP Table and Narrative**	4 **Operational BMPs—Include in WQMP Table and Narrative**
❑ **K.** Vehicle/Equipment Repair and Maintenance	❑ Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater. ❑ Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas. ❑ Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.	❑ State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area. ❑ State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements. ❑ State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.	In the Stormwater Control Plan, note that all of the following restrictions apply to use the site: ❑ No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains. ❑ No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately. ❑ No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment. Refer to "Automotive Maintenance & Car Care Best Management Practices for Auto Body Shops, Auto Repair Shops, Car Dealerships, Gas Stations and Fleet Service Operations; "Outdoor Cleaning Activities;" and "Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants. Brochures can be found at: http://www.rcwatershed.org/about/materials-library/#1450389926766-61e8af0b-53a9

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☑ **L.** Fuel Dispensing Areas	☑ Fueling areas[6] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable. ☑ Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.		☑ The property owner shall dry sweep the fueling area routinely. ☑ See the Fact Sheet SD-30 , "Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

[6] The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☑ **M.** Loading Docks	☑ Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer. ☑ Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation. ☑ Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.		☑ Move loaded and unloaded items indoors as soon as possible. ☑ See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☑ **N.** Fire Sprinkler Test Water		☑ Provide a means to drain fire sprinkler test water to the sanitary sewer.	☑ See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
O. Miscellaneous Drain or Wash Water or Other Sources ❑ Boiler drain lines ❑ Condensate drain lines ☑ Rooftop equipment ❑ Drainage sumps ❑ Roofing, gutters, and trim. ❑ Other sources		❑ Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system. ❑ Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. ☑ Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment. ❑ Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water. ❑ Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff. ❑ Include controls for other sources as specified by local reviewer.	

Appendix 8
STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on WQMP Drawings**	3 **Permanent Controls—List in WQMP Table and Narrative**	4 **Operational BMPs—Include in WQMP Table and Narrative**
☑ **P.** Plazas, sidewalks, and parking lots.			☑ Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

- The BMP operation and Maintenance agreement will be provided upon 'Final WQMP' approval.

CITY OF CORONA
WATER QUALITY MANAGEMENT PLAN AND STORMWATER BMP MAINTENANCE AND RIGHT OF ENTRY AGREEMENT WITH ARANTINE HILLS HOLDINGS, LP

1. PARTIES AND DATE.

THIS WATER QUALITY MANAGEMENT PLAN AND STORMWATER BMP MAINTENANCE AND RIGHT OF ENTRY AGREEMENT ("Agreement") is made and entered into in the City of Corona, California, this 11TH day of January 2018 by and between the City of Corona, a California municipal corporation ("City"), and ARANTINE HILLS HOLDINGS, LP, a Delaware Limited Partnership, with its principal place of business at 85 Enterprise, Suite 450, Aliso Viejo, CA 92656 ("Owner"). This Agreement applies to property located at APN No. 279-180-024-5, 279-190-045-5, 282-030-003-6, 279-240-018-5, 282-030-004-7, 282-030-006-9, 282-030-008-1, 282-030-005-8 in the County of Riverside, State of California.

2. RECITALS.

2.1 The Owner owns real property ("Property") in the City of Corona, County of Riverside, State of California, more specifically described in Exhibit "A" and depicted in Exhibit "B", each of which exhibits is attached hereto and incorporated herein by this reference.

2.2 At the time of initial approval of Owner's development project known as Arantine Hills, Tract 37030 within the Property, the City required the project to employ Best Management Practices, hereinafter referred to as "BMPs," to minimize pollutants in urban runoff.

2.3 The Owner has chosen to install and/or implement BMPs as described in the Water Quality Management Plan, on file with the City, hereinafter referred to as "WQMP", to minimize pollutants in urban runoff and to minimize other adverse impacts of urban runoff.

2.4 The WQMP has been certified by the Owner and reviewed and approved by the City.

2.5 The BMPs, with installation and/or implementation on private property and draining only private property, are part of a private facility with all maintenance or replacement, therefore, the sole responsibility of the Owner in accordance with the terms of this Agreement.

2.6 The Owner is aware that periodic and continuous maintenance, including, but not necessarily limited to, filter material replacement and sediment removal, is required to assure peak performance of all BMPs in the WQMP and that, furthermore, such maintenance activity will require compliance with all Local, State, or Federal laws

and regulations, including those pertaining to confined space and waste disposal methods, in effect at the time such maintenance occurs

3. TERMS.

3.1 Responsibility for Operation and Maintenance of BMPs. Owner shall diligently maintain all BMPs in a manner assuring peak performance at all times. All reasonable precautions shall be exercised by Owner and Owner's representative or contractor in the removal and extraction of any material(s) from the BMPs and the ultimate disposal of the material(s) in a manner consistent with all relevant laws and regulations in effect at the time. As may be requested from time to time by the City, the Owner shall provide the City with documentation identifying the material(s) removed, the quantity, and disposal destination.

3.2 Right of Access. Owner hereby provides the City or City's designee complete access, of any duration, to the BMPs and their immediate vicinity at any time, upon reasonable notice, or in the event of emergency, as determined by City's Director of Public Works ("Director"), no advance notice, for the purpose of inspection, sampling, testing of the BMPs, and in case of emergency, to undertake, in the City's sole discretion, necessary repairs or other preventative measures at Owner's expense as provided in paragraph 3 below. City shall make every effort at all times to minimize or avoid interference with Owner's use of the Property.

3.3 City Maintenance at Owner's Expense. In the event Owner, or its successors or assigns, fails to accomplish the necessary maintenance contemplated by this Agreement, within five (5) days of being given written notice by the City, the City is hereby authorized to cause any maintenance necessary to be done and charge the entire cost and expense to the Owner or Owner's successors or assigns, including administrative costs, attorneys fees and interest thereon at the maximum rate authorized by the Civil Code from the date of the notice of expense until paid in full. The City, at its sole election, may make these costs to be a lien upon the property that may be collected at the same time and in the same manner as ordinary municipal taxes as provided in Government Code section 38773.5. Nothing in this section or this Agreement creates an obligation by the City to maintain or repair any BMP, nor does this section prohibit the City from pursuing other legal recourse against Owner.

3.4 Recording. This Agreement shall be recorded in the Office of the Recorder of Riverside County, California, at the expense of the Owner and shall constitute notice to all successors and assigns of the title to said Property of the obligation herein set forth, and also a lien in such amount as will fully reimburse the City, including interest as herein above set forth, subject to foreclosure in event of default in payment.

3.5 Attorney's Fees. In event of legal action occasioned by any default or action of the Owner, or its successors or assigns, the Owner and its successors or assigns agree(s) to pay all costs incurred by the City in enforcing the terms of this Agreement,

including reasonable attorney's fees and costs, and that the same shall become a part of the lien against said Property.

3.6 Covenant. It is the intent of the parties hereto that burdens and benefits herein undertaken shall constitute covenants that run with said Property and constitute a lien there against.

3.7 Binding on Successors. The obligations herein undertaken shall be binding upon the heirs, successors, executors, administrators and assigns of the parties hereto. The term "Owner" shall include not only the present Owner, but also its heirs, successors, executors, administrators, and assigns. Owner shall notify any successor to title of all or part of the Property about the existence of this Agreement. Owner shall provide such notice prior to such successor obtaining an interest in all or part of the Property. Owner shall provide a copy of such notice to the City at the same time such notice is provided to the successor.

3.8 Indemnity and Insurance. The Owner, its heirs, successors, executors, administrators and assigns agree to defend, indemnify and holds harmless the City, its officials, employees and its authorized agents from any and all damages, accidents, casualties, occurrences or claims (collectively, "Claims") which might arise or be asserted against the City and which are in any way connected with the construction, operation, presence, existence or maintenance of the BMP by the Owner, or from any personal injury or property damage that may result from the City or other public entities entering the Property under Sections 2 or 3 of this Agreement; provided, however, that in no event shall Owner, its heirs, successors, executors, administrators and assigns be obligated to defend, indemnify or hold harmless the City, its officials, employees, and its authorized agents from any Claims arising from the City's or its officials, employees, and its authorized agents active negligence or willful misconduct while the City enters the Property under Section 2 or 3 of this Agreement.. The Owner shall maintain liability insurance in commercially reasonable amounts, but not less than $1,000,000.00, covering the BMP and City. The City shall require proof of insurance to be provided to City on a regular basis as determined by the City.

3.9 Time of the Essence. Time is of the essence in the performance of this Agreement.

3.10 Notice. Any notice to a party required or called for in this Agreement shall be served in person, or by deposit in the U.S. Mail, first class postage prepaid, to the address set forth below. Notice(s) shall be deemed effective upon receipt, or seventy-two (72) hours after deposit in the U.S. Mail, whichever is earlier. A party may change a notice address only by providing written notice thereof to the other party.

IF TO CITY:

City of Corona
400 South Vicentia Avenue
Corona, CA 92882
Attn: Lisa Mobley

IF TO OWNER:

[SIGNATURES ON FOLLOWING PAGE]

[REMAINDER OF PAGE LEFT INTENTIONALLY BLANK]

SIGNATURE PAGE TO
CITY OF CORONA
WATER QUALITY MANAGEMENT PLAN AND STORMWATER BMP MAINTENANCE AND RIGHT OF ENTRY AGREEMENT
WITH ARANTINE HILLS HOLDINGS, LP

IN WITNESS THEREOF, the parties hereto have executed this Agreement as of the date first written above.

CITY OF CORONA
a California municipal corporation

By: _____
Nelson D. Nelson
Public Works Director

ATTEST:

_____
City Clerk

Guardian Capital

By: _____
Signature

_____
Name (Print)

_____
Title (Print)

By: _____
Signature

_____
Name (Print)

_____
Title (Print)

ATTEST:

_____
[***INSERT NAME***]
[***INSERT TITLE***]

[***NOTE (READ AND DELETE THIS BLOCK BEFORE USING MODEL): SIGNATURE BLOCKS CAN VARY DEPENDING UPON THE APPLICANT'S TYPE OF LEGAL ENTITY (E.G. CORPORATION; GENERAL PARTNERSHIP; LIMITED PARTNERSHIP; LIMITED LIABILITY PARTNERSHIP OR COMPANY; OR AN INDIVIDUAL). THIS MODEL CONTAINS A GENERAL FRAMEWORK WHICH WILL WORK FOR MOST CORPORATIONS, INDIVIDUAL (NON-CORPORATE) PARTNERSHIPS AND INDIVIDUAL SOLE PROPRIETORSHIPS. PLEASE REFER TO THE CITY CLERK'S "SIGNATURE REQUIREMENT" MEMO ON THE INFO WEB FOR COMPLETE INFORMATION***]

NOTARY ACKNOWLEDGEMENT OF CITY

STATE OF CALIFORNIA)
COUNTY OF _____)

On _____ before me, (here insert name and title of the officer), personally appeared _____, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under penalty of perjury under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature of Notary Public: (Seal)

_____

_____

NOTARY ACKNOWLEDGEMENT OF CITY

STATE OF CALIFORNIA)
COUNTY OF _____)

On _____ before me, (here insert name and title of the officer), personally appeared _____, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under penalty of perjury under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature of Notary Public: (Seal)

_____

_____

NOTARY ACKNOWLEDGEMENT OF OWNER

STATE OF CALIFORNIA)
COUNTY OF _____)

On _____ before me, (here insert name and title of the officer), personally appeared _____, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under penalty of perjury under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature of Notary Public: (Seal)

_____

_____

NOTARY ACKNOWLEDGEMENT OF OWNER

STATE OF CALIFORNIA)
COUNTY OF _____)

On _____ before me, (here insert name and title of the officer), personally appeared _____, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under penalty of perjury under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature of Notary Public: (Seal)

_____

_____

EXHIBIT "A"
(LEGAL DESCRIPTION)

EXHIBIT "B"
(MAP/ILLUSTRATION)

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

3.1 INFILTRATION BASIN

Type of BMP	LID - Infiltration
Treatment Mechanisms	Infiltration, Evapotranspiration (when vegetated), Evaporation, and Sedimentation
Maximum Treatment Area	50 acres
Other Names	Bioinfiltration Basin

Description

An Infiltration Basin is a flat earthen basin designed to capture the design capture volume, V_{BMP}. The stormwater infiltrates through the bottom of the basin into the underlying soil over a 72 hour drawdown period. Flows exceeding V_{BMP} must discharge to a downstream conveyance system. Trash and sediment accumulate within the forebay as stormwater passes into the basin. Infiltration basins are highly effective in removing all targeted pollutants from stormwater runoff.



Figure 1 – Infiltration Basin

See Appendix A, and Appendix C, Section 1 of *Basin Guidelines*, for additional requirements.

Siting Considerations

The use of infiltration basins may be restricted by concerns over ground water contamination, soil permeability, and clogging at the site. See the applicable WQMP for any specific feasibility considerations for using infiltration BMPs. Where this BMP is being used, the soil beneath the basin must be thoroughly evaluated in a geotechnical report since the underlying soils are critical to the basin's long term performance. To protect the basin from erosion, the sides and bottom of the basin must be vegetated, preferably with native or low water use plant species.

In addition, these basins may not be appropriate for the following site conditions:

- Industrial sites or locations where spills of toxic materials may occur
- Sites with very low soil infiltration rates
- Sites with high groundwater tables or excessively high soil infiltration rates, where pollutants can affect ground water quality
- Sites with unstabilized soil or construction activity upstream
- On steeply sloping terrain
- Infiltration basins located in a fill condition should refer to Appendix A of this Handbook for details on special requirements/restrictions

Setbacks

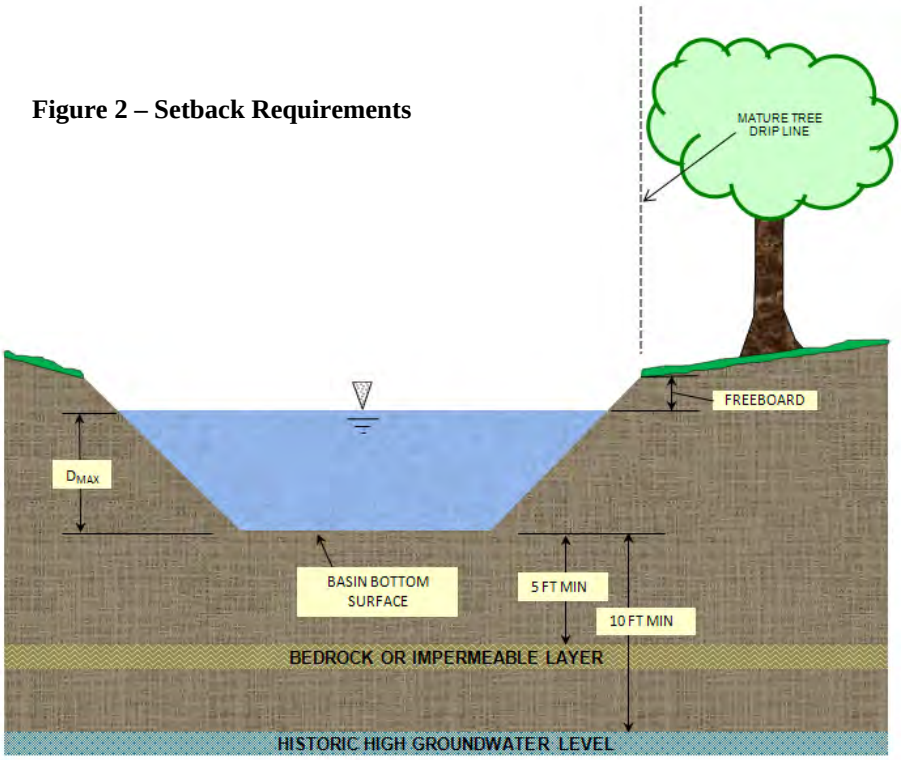
Always consult your geotechnical engineer for site specific recommendations regarding setbacks for infiltration trenches. Recommended setbacks are needed to protect buildings, existing trees, walls, onsite or nearby wells, streams, and tanks. Setbacks should be considered early in the design process since they can affect where infiltration facilities may be placed and how deep they are allowed to be. For instance, depth setbacks can dictate fairly shallow facilities that will have a larger footprint and, in some cases, may make an infiltration basin infeasible. In that instance, another BMP must be selected.

Infiltration basins typically must be set back:

- 10 feet from the historic high groundwater (measured vertically from the bottom of the basin, as shown in Figure 2)
- 5 feet from bedrock or impermeable surface layer (measured vertically from the bottom of the basin, as shown in Figure 2)
- From all existing mature tree drip lines as indicated in Figure 2 (to protect their root structure)
- 100 feet horizontally from wells, tanks or springs

Setbacks to walls and foundations must be included as part of the Geotechnical Report. All other setbacks shall be in accordance with applicable standards of the District's *Basin Guidelines* (Appendix C).

Figure 2 – Setback Requirements



Forebay

A concrete forebay shall be provided to reduce sediment clogging and to reduce erosion. The forebay shall have a design volume of at least 0.5% V_{BMP} and a minimum 1 foot high concrete splashwall / berm. Full height notch-type weir(s), offset from the line of flow from the basin inlet to prevent short circuiting, shall be used to outlet the forebay. It is recommended that two weirs be used and that they be located on opposite sides of the forebay (see Figure 2).

Overflow

Flows exceeding V_{BMP} must discharge to an acceptable downstream conveyance system. Where an adequate outlet is present, an overflow structure may be used. Where an embankment is present, an emergency spillway may be used instead. Overflows must be placed just above the design water surface for V_{BMP} and be near the outlet of the system. The overflow structure shall be similar to the District's Standard Drawing CB 110. Additional details may be found in the District's *Basin Guidelines* (Appendix C).

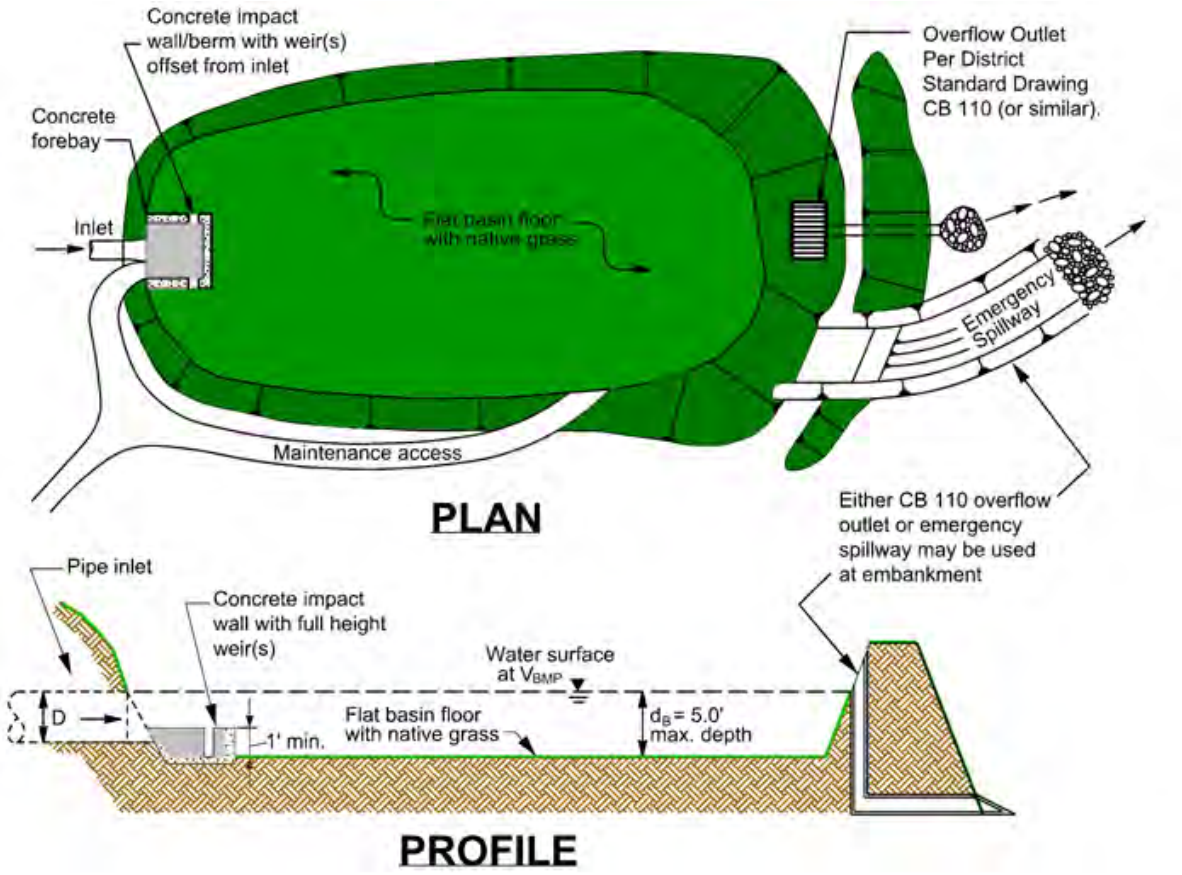


Figure 3 – Infiltration Basin

Landscaping Requirements

Basin vegetation provides erosion protection, improves sediment removal and assists in allowing infiltration to occur. The basin surface and side slopes shall be planted with native grasses. Proper landscape management is also required to ensure that the vegetation does not contribute to water pollution through pesticides, herbicides, or fertilizers. Landscaping shall be in accordance with County of Riverside Ordinance 859 and the District's *Basin Guidelines* (Appendix C), or other guidelines issued by the Engineering Authority.

Maintenance

Normal maintenance of an infiltration basin includes the maintenance of landscaping, debris and trash removal from the surface of the basin, and tending to problems associated with standing water (vectors, odors, etc.). Significant ponding, especially more than 72 hours after an event, may indicate that the basin surface is no longer providing sufficient infiltration and requires aeration. See the District's *Basin Guidelines* (Appendix C) for additional requirements (i.e., fencing, maintenance access, etc.).

Table 1 - Inspection and Maintenance

Schedule	Inspection and Maintenance Activity
Ongoing including just before annual storm seasons and following rainfall events.	• Maintain vegetation as needed. Use of fertilizers, pesticides and herbicides should be strenuously avoided to ensure they don't contribute to water pollution. If appropriate native plant selections and other IPM methods are used, such products shouldn't be needed. If such projects are used, o Products shall be applied in accordance with their labeling, especially in relation to application to water, and in areas subjected to flooding. o Fertilizers should not be applied within 15 days before, after, or during the rain season. • Remove debris and litter from the entire basin to minimize clogging and improve aesthetics. • Check for obvious problems and repair as needed. Address odor, insects, and overgrowth issues associated with stagnant or standing water in the basin bottom. There should be no long-term ponding water. • Check for erosion and sediment laden areas in the basin. Repair as needed. Clean forebay if needed. • Revegetate side slopes where needed.
Annually. If possible, schedule these inspections within 72 hours after a significant rainfall.	• Inspection of hydraulic and structural facilities. Examine the inlet for blockage, the embankment and spillway integrity, as well as damage to any structural element. • Check for erosion, slumping and overgrowth. Repair as needed. • Check basin depth for sediment build up and reduced total capacity. Scrape bottom as needed and remove sediment. Restore to original cross-section and infiltration rate. Replant basin vegetation. • Verify the basin bottom is allowing acceptable infiltration. Use a disc or other method to aerate basin bottom only if there is actual significant loss of infiltrative capacity, rather than on a routine basis[1]. • No water should be present 72 hours after an event. No long term standing water should be present at all. No algae formation should be visible. Correct problem as needed.

1. **CA Stormwater BMP Handbook for New Development and Significant Redevelopment**

Table 2 - Design and Sizing Criteria for Infiltration Basins

Design Parameter	Infiltration Basin
Design Volume	V_{BMP}
Forebay Volume	0.5% V_{BMP}
Drawdown time (maximum)	72 hours
Maximum tributary area	50 acres [2]
Minimum infiltration rate	Must be sufficient to drain the basin within the required Drawdown time over the life of the BMP. The WQMP may include specific requirements for minimum tested infiltration rates.
Maximum Depth	5 feet
Spillway erosion control	Energy dissipators to reduce velocities[1]
Basin Slope	0%
Freeboard (minimum)	1 foot [1]
Historic High Groundwater Setback (max)	10 feet
Bedrock/impermeable layer setback (max)	5 feet
Tree setbacks	Mature tree drip line must not overhang the basin
Set back from wells, tanks or springs	100 feet
Set back from foundations	As recommended in Geotechnical Report

1. **Ventura County's Technical Guidance Manual for Stormwater Quality Control Measures**
2. **CA Stormwater BMP Handbook for New Development and Significant Redevelopment**

Note: The information contained in this BMP Factsheet is intended to be a summary of design considerations and requirements. Additional information which applies to all detention basins may be found in the District's Basin Guidelines (Appendix C). In addition, information herein may be superseded by other guidelines issued by the co-permittee.

INFILTRATION BASIN SIZING PROCEDURE

1. Find the Design Volume, V_{BMP}.
   a) Enter the Tributary Area, $A_{T.}$
   b) Enter the Design Volume, V_{BMP}, determined from Section 2.1 of this Handbook.
2. Determine the Maximum Depth.
   a) Enter the infiltration rate. The infiltration rate shall be established as described in Appendix A: "Infiltration Testing".
   b) Enter the design Factor of Safety from Table 1 in Appendix A: "Infiltration Testing".
   c) The spreadsheet will determine D_1, the maximum allowable depth of the basin based on the infiltration rate along with the maximum drawdown time (72 hours) and the Factor of Safety.

$$D_1 = [(t) \times (I)] / 12s$$

Where I = site infiltration rate (in/hr)
s = safety factor
t = drawdown time (maximum 72 hours)

d) Enter the depth of freeboard.

e) Enter the depth to the historic high groundwater level measured from the top of the basin.

f) Enter the depth to the top of bedrock or other impermeable layer measured from the finished grade.

g) The spreadsheet will determine D_2, the total basin depth (including freeboard, if used) of the basin, based on restrictions to the depth by groundwater and an impermeable layer.

D_2 = Depth to groundwater – (10 + freeboard) (ft);

or

D_2 = Depth to impermeable layer – (5 + freeboard) (ft)

Whichever is least.

h) The spreadsheet will determine the maximum allowable effective depth of basin, D_{MAX}, based on the smallest value between D_1 and D_2. D_{MAX} is the maximum depth of water only and does not include freeboard. D_{MAX} shall not exceed 5 feet.

3. Basin Geometry

a) Enter the basin side slopes, z (no steeper than 4:1).

b) Enter the proposed basin depth, d_B excluding freeboard.

c) The spreadsheet will determine the minimum required surface area of the basin:

$$A_s = V_{BMP} / d_B$$

Where A_s = minimum area required (ft^2)
V_{BMP} = volume of the infiltration basin (ft^3)
d_B= proposed depth not to exceed maximum allowable depth, D_{MAX} (ft)

d) Enter the proposed bottom surface area. This area shall not be less than the minimum required surface area.

4. Forebay

A concrete forebay with a design volume of at least 0.5% V_{BMP} and a minimum 1 foot high concrete splashwall shall be provided. Full-height rectangular weir(s) shall be used to outlet the forebay. The weir(s) must be offset from the line of flow from the basin inlet. It is recommended that two weirs be used and that they be located on opposite sides of the forebay (see Figure 2).

a) The spreadsheet will determine the minimum required forebay volume based on 0.5% V_{BMP}.

b) Enter the proposed depth of the forebay berm/splashwall (1foot minimum).

c) The spreadsheet will determine the minimum required forebay surface area.

d) Enter the width of rectangular weir to be used (minimum 1.5 inches). Weir width should be established based on a 5 minute drawdown time.

Infiltration Basin TC-11



Design Considerations

- Soil for Infiltration
- Slope
- Aesthetics

Targeted Constituents

☑	Sediment	■
☑	Nutrients	■
☑	Trash	■
☑	Metals	■
☑	Bacteria	■
☑	Oil and Grease	■
☑	Organics	■

Legend ***(Removal Effectiveness)***

● Low ■ High

▲ Medium

Description

An infiltration basin is a shallow impoundment that is designed to infiltrate stormwater. Infiltration basins use the natural filtering ability of the soil to remove pollutants in stormwater runoff. Infiltration facilities store runoff until it gradually exfiltrates through the soil and eventually into the water table. This practice has high pollutant removal efficiency and can also help recharge groundwater, thus helping to maintain low flows in stream systems. Infiltration basins can be challenging to apply on many sites, however, because of soils requirements. In addition, some studies have shown relatively high failure rates compared with other management practices.

California Experience

Infiltration basins have a long history of use in California, especially in the Central Valley. Basins located in Fresno were among those initially evaluated in the National Urban Runoff Program and were found to be effective at reducing the volume of runoff, while posing little long-term threat to groundwater quality (EPA, 1983; Schroeder, 1995). Proper siting of these devices is crucial as underscored by the experience of Caltrans in siting two basins in Southern California. The basin with marginal separation from groundwater and soil permeability failed immediately and could never be rehabilitated.

Advantages

- Provides 100% reduction in the load discharged to surface waters.
- The principal benefit of infiltration basins is the approximation of pre-development hydrology during which a

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

significant portion of the average annual rainfall runoff is infiltrated and evaporated rather than flushed directly to creeks.

- If the water quality volume is adequately sized, infiltration basins can be useful for providing control of channel forming (erosion) and high frequency (generally less than the 2-year) flood events.

Limitations

- May not be appropriate for industrial sites or locations where spills may occur.
- Infiltration basins require a minimum soil infiltration rate of 0.5 inches/hour, not appropriate at sites with Hydrologic Soil Types C and D.
- If infiltration rates exceed 2.4 inches/hour, then the runoff should be fully treated prior to infiltration to protect groundwater quality.
- Not suitable on fill sites or steep slopes.
- Risk of groundwater contamination in very coarse soils.
- Upstream drainage area must be completely stabilized before construction.
- Difficult to restore functioning of infiltration basins once clogged.

Design and Sizing Guidelines

- Water quality volume determined by local requirements or sized so that 85% of the annual runoff volume is captured.
- Basin sized so that the entire water quality volume is infiltrated within 48 hours.
- Vegetation establishment on the basin floor may help reduce the clogging rate.

Construction/Inspection Considerations

- Before construction begins, stabilize the entire area draining to the facility. If impossible, place a diversion berm around the perimeter of the infiltration site to prevent sediment entrance during construction or remove the top 2 inches of soil after the site is stabililized. Stabilize the entire contributing drainage area, including the side slopes, before allowing any runoff to enter once construction is complete.
- Place excavated material such that it can not be washed back into the basin if a storm occurs during construction of the facility.
- Build the basin without driving heavy equipment over the infiltration surface. Any equipment driven on the surface should have extra-wide ("low pressure") tires. Prior to any construction, rope off the infiltration area to stop entrance by unwanted equipment.
- After final grading, till the infiltration surface deeply.
- Use appropriate erosion control seed mix for the specific project and location.

Performance

As water migrates through porous soil and rock, pollutant attenuation mechanisms include precipitation, sorption, physical filtration, and bacterial degradation. If functioning properly, this approach is presumed to have high removal efficiencies for particulate pollutants and moderate removal of soluble pollutants. Actual pollutant removal in the subsurface would be expected to vary depending upon site-specific soil types. This technology eliminates discharge to surface waters except for the very largest storms; consequently, complete removal of all stormwater constituents can be assumed.

There remain some concerns about the potential for groundwater contamination despite the findings of the NURP and Nightingale (1975; 1987a,b,c; 1989). For instance, a report by Pitt et al. (1994) highlighted the potential for groundwater contamination from intentional and unintentional stormwater infiltration. That report recommends that infiltration facilities not be sited in areas where high concentrations are present or where there is a potential for spills of toxic material. Conversely, Schroeder (1995) reported that there was no evidence of groundwater impacts from an infiltration basin serving a large industrial catchment in Fresno, CA.

Siting Criteria

The key element in siting infiltration basins is identifying sites with appropriate soil and hydrogeologic properties, which is critical for long term performance. In one study conducted in Prince George's County, Maryland (Galli, 1992), all of the infiltration basins investigated clogged within 2 years. It is believed that these failures were for the most part due to allowing infiltration at sites with rates of less than 0.5 in/hr, basing siting on soil type rather than field infiltration tests, and poor construction practices that resulted in soil compaction of the basin invert.

A study of 23 infiltration basins in the Pacific Northwest showed better long-term performance in an area with highly permeable soils (Hilding, 1996). In this study, few of the infiltration basins had failed after 10 years. Consequently, the following guidelines for identifying appropriate soil and subsurface conditions should be rigorously adhered to.

- Determine soil type (consider RCS soil type 'A, B or C' only) from mapping and consult USDA soil survey tables to review other parameters such as the amount of silt and clay, presence of a restrictive layer or seasonal high water table, and estimated permeability. The soil should not have more than 30% clay or more than 40% of clay and silt combined. Eliminate sites that are clearly unsuitable for infiltration.

- Groundwater separation should be at least 3 m from the basin invert to the measured ground water elevation. There is concern at the state and regional levels of the impact on groundwater quality from infiltrated runoff, especially when the separation between groundwater and the surface is small.

- Location away from buildings, slopes and highway pavement (greater than 6 m) and wells and bridge structures (greater than 30 m). Sites constructed of fill, having a base flow or with a slope greater than 15% should not be considered.

- Ensure that adequate head is available to operate flow splitter structures (to allow the basin to be offline) without ponding in the splitter structure or creating backwater upstream of the splitter.

- Base flow should not be present in the tributary watershed.

Secondary Screening Based on Site Geotechnical Investigation

- At least three in-hole conductivity tests shall be performed using USBR 7300-89 or Bouwer-Rice procedures (the latter if groundwater is encountered within the boring), two tests at different locations within the proposed basin and the third down gradient by no more than approximately 10 m. The tests shall measure permeability in the side slopes and the bed within a depth of 3 m of the invert.

- The minimum acceptable hydraulic conductivity as measured in any of the three required test holes is 13 mm/hr. If any test hole shows less than the minimum value, the site should be disqualified from further consideration.

- Exclude from consideration sites constructed in fill or partially in fill unless no silts or clays are present in the soil boring. Fill tends to be compacted, with clays in a dispersed rather than flocculated state, greatly reducing permeability.

- The geotechnical investigation should be such that a good understanding is gained as to how the stormwater runoff will move in the soil (horizontally or vertically) and if there are any geological conditions that could inhibit the movement of water.

Additional Design Guidelines

(1) Basin Sizing - The required water quality volume is determined by local regulations or sufficient to capture 85% of the annual runoff.

(2) Provide pretreatment if sediment loading is a maintenance concern for the basin.

(3) Include energy dissipation in the inlet design for the basins. Avoid designs that include a permanent pool to reduce opportunity for standing water and associated vector problems.

(4) Basin invert area should be determined by the equation:

$$A = \frac{WQV}{kt}$$

where A = Basin invert area (m^2)

WQV = water quality volume (m^3)

k = 0.5 times the lowest field-measured hydraulic conductivity (m/hr)

t = drawdown time (48 hr)

(5) The use of vertical piping, either for distribution or infiltration enhancement shall not be allowed to avoid device classification as a Class V injection well per 40 CFR146.5(e)(4).

Maintenance

Regular maintenance is critical to the successful operation of infiltration basins. Recommended operation and maintenance guidelines include:

- Inspections and maintenance to ensure that water infiltrates into the subsurface completely (recommended infiltration rate of 72 hours or less) and that vegetation is carefully managed to prevent creating mosquito and other vector habitats.
- Observe drain time for the design storm after completion or modification of the facility to confirm that the desired drain time has been obtained.
- Schedule semiannual inspections for beginning and end of the wet season to identify potential problems such as erosion of the basin side slopes and invert, standing water, trash and debris, and sediment accumulation.
- Remove accumulated trash and debris in the basin at the start and end of the wet season.
- Inspect for standing water at the end of the wet season.
- Trim vegetation at the beginning and end of the wet season to prevent establishment of woody vegetation and for aesthetic and vector reasons.
- Remove accumulated sediment and regrade when the accumulated sediment volume exceeds 10% of the basin.
- If erosion is occurring within the basin, revegetate immediately and stabilize with an erosion control mulch or mat until vegetation cover is established.
- To avoid reversing soil development, scarification or other disturbance should only be performed when there are actual signs of clogging, rather than on a routine basis. Always remove deposited sediments before scarification, and use a hand-guided rotary tiller, if possible, or a disc harrow pulled by a very light tractor.

Cost

Infiltration basins are relatively cost-effective practices because little infrastructure is needed when constructing them. One study estimated the total construction cost at about $2 per ft (adjusted for inflation) of storage for a 0.25-acre basin (SWRPC, 1991). As with other BMPs, these published cost estimates may deviate greatly from what might be incurred at a specific site. For instance, Caltrans spent about $18/ft^3 for the two infiltration basins constructed in southern California, each of which had a water quality volume of about 0.34 ac.-ft. Much of the higher cost can be attributed to changes in the storm drain system necessary to route the runoff to the basin locations.

Infiltration basins typically consume about 2 to 3% of the site draining to them, which is relatively small. Additional space may be required for buffer, landscaping, access road, and fencing. Maintenance costs are estimated at 5 to 10% of construction costs.

One cost concern associated with infiltration practices is the maintenance burden and longevity. If improperly maintained, infiltration basins have a high failure rate. Thus, it may be necessary to replace the basin with a different technology after a relatively short period of time.

References and Sources of Additional Information

Caltrans, 2002, BMP Retrofit Pilot Program Proposed Final Report, Rpt. CTSW-RT-01-050, California Dept. of Transportation, Sacramento, CA.

Galli, J. 1992. *Analysis of Urban BMP Performance and Longevity in Prince George's County, Maryland*. Metropolitan Washington Council of Governments, Washington, DC.

Hilding, K. 1996. Longevity of infiltration basins assessed in Puget Sound. *Watershed Protection Techniques* 1(3):124–125.

Maryland Department of the Environment (MDE). 2000. *Maryland Stormwater Design Manual*. http://www.mde.state.md.us/environment/wma/stormwatermanual. Accessed May 22, 2002.

Metzger, M. E., D. F. Messer, C. L. Beitia, C. M. Myers, and V. L. Kramer. 2002. The Dark Side Of Stormwater Runoff Management: Disease Vectors Associated With Structural BMPs. Stormwater 3(2): 24-39.

Nightingale, H.I., 1975, "Lead, Zinc, and Copper in Soils of Urban Storm-Runoff Retention Basins," American Water Works Assoc. Journal. Vol. 67, p. 443-446.

Nightingale, H.I., 1987a, "Water Quality beneath Urban Runoff Water Management Basins," Water Resources Bulletin, Vol. 23, p. 197-205.

Nightingale, H.I., 1987b, "Accumulation of As, Ni, Cu, and Pb in Retention and Recharge Basin Soils from Urban Runoff," Water Resources Bulletin, Vol. 23, p. 663-672.

Nightingale, H.I., 1987c, "Organic Pollutants in Soils of Retention/Recharge Basins Receiving Urban Runoff Water," Soil Science Vol. 148, pp. 39-45.

Nightingale, H.I., Harrison, D., and Salo, J.E., 1985, "An Evaluation Technique for Ground-water Quality Beneath Urban Runoff Retention and Percolation Basins," Ground Water Monitoring Review, Vol. 5, No. 1, pp. 43-50.

Oberts, G. 1994. Performance of Stormwater Ponds and Wetlands in Winter. *Watershed Protection Techniques* 1(2): 64–68.

Pitt, R., et al. 1994, *Potential Groundwater Contamination from Intentional and Nonintentional Stormwater Infiltration*, EPA/600/R-94/051, Risk Reduction Engineering Laboratory, U.S. EPA, Cincinnati, OH.

Schueler, T. 1987. *Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMPs*. Metropolitan Washington Council of Governments, Washington, DC.

Schroeder, R.A., 1995, *Potential For Chemical Transport Beneath a Storm-Runoff Recharge (Retention) Basin for an Industrial Catchment in Fresno, CA*, USGS Water-Resource Investigations Report 93-4140.

Southeastern Wisconsin Regional Planning Commission (SWRPC). 1991. *Costs of Urban Nonpoint Source Water Pollution Control Measures*. Southeastern Wisconsin Regional Planning Commission, Waukesha, WI.

U.S. EPA, 1983, *Results of the Nationwide Urban Runoff Program: Volume 1 – Final Report*, WH-554, Water Planning Division, Washington, DC.

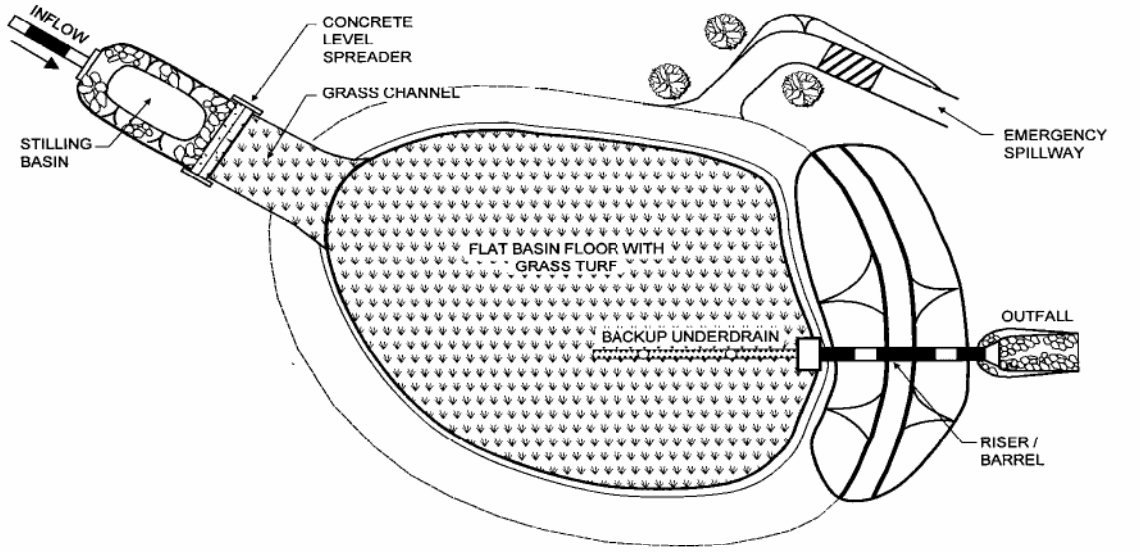
Watershed Management Institute (WMI). 1997. *Operation, Maintenance, and Management of Stormwater Management Systems*. Prepared for U.S. Environmental Protection Agency Office of Water, Washington, DC.

Information Resources

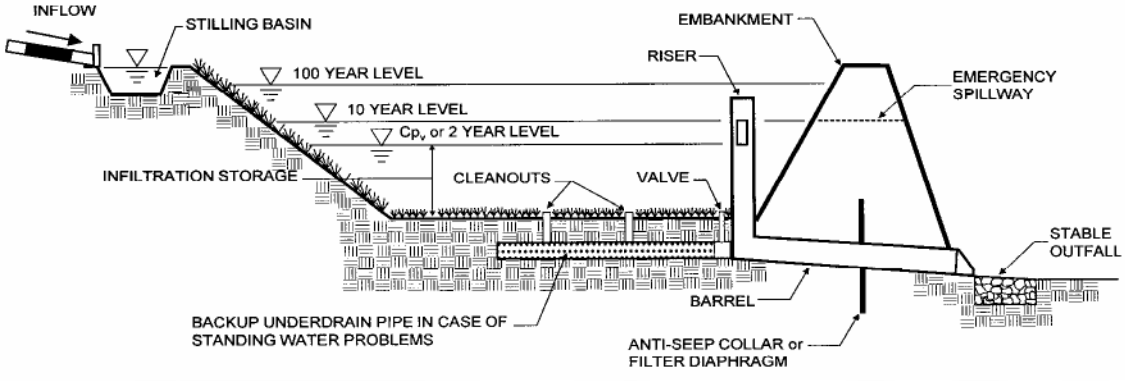
Center for Watershed Protection (CWP). 1997. *Stormwater BMP Design Supplement for Cold Climates*. Prepared for U.S. Environmental Protection Agency Office of Wetlands, Oceans and Watersheds. Washington, DC.

Ferguson, B.K., 1994. *Stormwater Infiltration*. CRC Press, Ann Arbor, MI.

USEPA. 1993. *Guidance to Specify Management Measures for Sources of Nonpoint Pollution in Coastal Waters*. EPA-840-B-92-002. U.S. Environmental Protection Agency, Office of Water, Washington, DC.

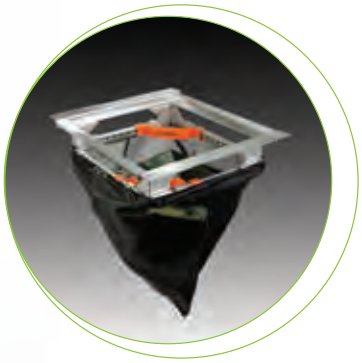


PLAN VIEW



PROFILE

FLEXSTORM® PURE PERMANENT INLET PROTECTION



SPECIFY WITH CONFIDENCE

State DOTs and Municipalities across the country now have a universal structural BMP to address the issue of storm sewer inlet protection: FLEXSTORM PURE Inlet Filters.

The FLEXSTORM PURE system is the preferred choice for permanent inlet protection and storm water runoff control. Constructed of versatile stainless steel, FLEXSTORM PURE Inlet Filters will fit any drainage structure and are available with site-specific filter bags providing various levels of filtration. Whether you're the specifier or the user, it's clear to see how FLEXSTORM PURE Inlet Filters outperform the competition.

APPLICATIONS:

Car Washes	Gas Stations
Commercial	Parking Lots
Loading Ramps	Dock Drains
Industrial	Maintenance

FEATURES:

- Stainless Steel filter framing is custom configured to fit perfectly into any drainage structure, whether a standard design or obstructed inlet opening
- Filtered Flow Rates and Ultimate Bypass Rates are designed to meet your specific inlet requirements
- Multiple Filter Bags are available targeting site specific removal of trash, litter, leaves, or small particles, oil and grease
- Filters work below grade with an ultimate bypass allowing inlet area to drain with a full bag
- Units install in seconds and are easily maintained with the FLEXSTORM Universal Removal Tool (no heavy machinery required)

BENEFITS:

- Receive payback on your investment: durable stainless steel framing provides extended service life while replaceable filter bags handle loads with a safety factor of 5
- Meet stringent removal requirements:
  - –FX filter bags are rated for > 80% removal efficiency of street sweep-size particles
  - –PC/PC+ filter bags have been tested to 99% TSS removal of OK-110 US Silica Sand and 97% TPH (total petroleum hydrocarbon) removal
- Help prevent fines: FLEXSTORM Inlet Filters comply with EPA NPDES initiatives as a temporary or permanent BMP
- Available through 5,000 ADS distributors nationwide
- If not in stock, orders up to 100 pcs can ship within 48 hours



ADS Service: ADS representatives are committed to providing you with the answers to all your questions, including selecting the proper filter, specifications, installation and more. Also try the ADS FLEXSTORM Online Product Condfigurator at *www.inletfilters.com*

*The Most **Advanced** Name in Drainage Systems®*

FLEXSTORM PURE INLET FILTERS SPECIFICATION

IDENTIFICATION

The installer shall inspect the plans and/or worksite to determine the quantity of each drainage structure casting type. The foundry casting number, exact grate size and clear opening size, or other information will be necessary to finalize the FLEXSTORM part number and dimensions. The units are shipped to the field configured precisely to fit the identified drainage structure.

MATERIAL AND PERFORMANCE

The FLEXSTORM Inlet Filter system is comprised of a corrosion resistant steel frame and a replaceable geotextile filter bag attached to the frame with a stainless steel locking band. The filter bag hangs suspended at a distance below the grate that shall allow full water flow into the drainage structure if the bag is completely filled with sediment. The standard Woven Polypropylene FX filter bags are rated for 200 gpm/sqft with a removal efficiency of 82% when filtering a USDA Sandy Loam sediment load. The Post Construction PC filter bags are rated for 137 gpm/sqft and have been 3rd party tested at 99% TSS removal to 110 micron and 97% TPH removal of used motor oil hydrocarbon mix.

INSTALLATION

Remove the grate from the casting or concrete drainage structure. Clean the ledge (lip) of the casting frame or drain- age structure to ensure it is free of stone and dirt. Drop in the FLEXSTORM Inlet Filter through the clear opening and be sure the suspension hangers rest firmly on the inside ledge (lip) of the casting. Replace the grate and confirm it is elevated no more than 1/8", which is the thickness of the steel hangers. For wall mount units, follow instructions for attaching the stainless steel mounting brackets using the provided concrete fasteners.

INSPECTION FREQUENCY

Construction site inspection should occur following each 1⁄2" or more rain event. Post Construction inspections should occur three times per year (every four months) in areas with mild year round rainfall and four times per year (every three months Feb–Nov) in areas with summer rains before and after the winter snowfall season. Industrial application site inspections (loading ramps, wash racks, maintenance facilities) should occur on a regularly scheduled basis no less than three times per year.

MAINTENANCE GUIDELINES

Empty the filter bag if more than half filled with sediment and debris, or as directed by the Engineer. Remove the grate, engage the lifting bars or handles with the FLEXSTORM Removal Tool, and lift from the drainage structure. Dispose of the sediment or debris as directed by the Engineer or Maintenance Contract in accordance with EPA guidelines.

As an alternative, an industrial vacuum may be used to collect the accumulated sediment. Remove any caked on silt from the sediment bag and reverse flush the bag with medium spray for optimal filtration. Replace the bag if torn or punctured to 1⁄2" diameter or greater on the lower half of the bag. Post Construction PC/PC+ Bags should be maintained prior to 50% oil saturation. The average 2' x 2' PC filter bag will retain approx. 96 oz (5.4 lbs) of oil at which time it should be serviced or replaced. It can be centrifuged or passed through a wringer to recover the oils, and the fabric reused with 85% to 90% efficacy. It may also be recycled for its fuel value through waste to energy incineration. When utilizing the MyCelx Skimmer Pouches in the + bags, note that the skimmers start yellow in color and will gradually turn brown as they become saturated, indicating time for replacement. Each MyCelx skimmer pouch will absorb approximately 89 oz (5 lbs) of oil before requiring replacement. It may also be recycled for its fuel value through waste to energy incineration. Dispose of all oil contaminated products in accordance with EPA guidelines.

FILTER BAG REPLACEMENT

Remove the bag by loosening or cutting off the clamping band. Take the new filter bag, which is equipped with a stainless steel worm drive clamping band, and use a screw driver to tighten the bag around the frame channel. Ensure the bag is secure and that there is no slack around the perimeter of the band.

Lift Handles ease installation and maintenance



Replaceable Sediment Bag

1/8" thick steel hangers& channels; precision stampings **configured to fit each individual casting**



CAD drawings, work instructions and test reports on website: ***www.inletfilters.com***



For more information on FLEXSTORM Inlet Filters and other ADS products, please contact our Customer Service Representatives at 1-800-821-6710

ADS "Terms and Conditions of Sale" are available on the ADS website, www.ads-pipe.com
The ADS logo and the Green Stripe are registered trademarks of Advanced Drainage Systems, Inc.
FLEXSTORM is a registered trademark of Inlet & Pipe Protection, Inc.
© 2013 Advanced Drainage Systems, Inc. (AD370413) BRO 10892 08/13

Advanced Drainage Systems, Inc.
4640 Trueman Blvd., Hilliard, OH 43026
1-800-821-6710 www.ads-pipe.com

FLEXSTORM INLET FILTERS

POWERED BY filtrexx TECHNOLOGY

STORMEXX® CLEAN CATCH BASIN FILTER



FlexStorm has partnered with Filtrexx to offer the latest in compost filter technology. The StormExx Clean Catch Basin Filter utilizes an enhanced cartridge filter for the capture and removal of sediment, hydrocarbons, heavy metals, nutrients and bacteria from stormwater runoff. The filter insert sits below the grate and will fit any round or rectangular storm drain using FlexStorm engineered framing systems.

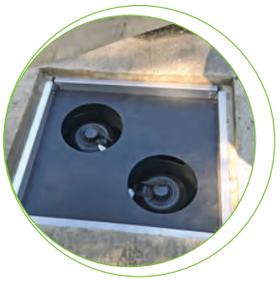
FEATURES & BENEFITS:

- Easy to install, maintain and replace
- Treats stormwater at the street/inlet level
- Patented multi-stage filtration system
- Option for double units
- Overflow bypass of 500+ gpm



REMOVAL RATES:

- TSS: 90%
- Total Phosphorous: 59%
- Soluble Phosphorous: 94%
- Ammonium Nitrate: 41%
- Chromium: 24%
- E. Coli: 93%
- pH (low) neutralized to 6.62
- Oil/Hydrocarbons: 99%
- Copper: 75%
- Zinc: 58%
- Cadmium: 99%
- Arsenic: 18%
- Total Coliform: 79%
- pH (high) neutralized to 8.31
- Turbidity: 76%
- Nickel: 58%
- TKN: 22%
- Lead: 60%
- Selenium: 25%
- Fecal Coliform: 71%



Values are total efficiency removal percentage of typical standard input stormwater concentrations over 10 run-off events. All pollutants are common stormwater pollutants and part of industrial and municipal stormwater permit effluent limit guideline regulations. For methodology, reference Filtrexx TechLink Research Summary #3338.







*THE MOST **ADVANCED** NAME IN WATER MANAGEMENT SOLUTIONS™*

STORMEXX CLEAN CATCH BASIN FILTER

SUMMARY

StormExx inserts are for use at stormwater catch basins in roadways, parking lots and paved areas as indicated on the plans and specifications. The inserts remove sediment, hydrocarbons, heavy metals, nutrients and bacteria from stormwater run-off. Installer must provide size and type as required upon placing order. Inserts shall include all components required for a complete installation at each catch basin as indicated on drawings. Each insert shall include a stainless steel framing system and a replaceable filter/absorber cartridge with filter media having a combined total volume of approximately 1,200 cubic inches.

CATCH BASIN INSERT FEATURES AND CHARACTERISTICS

1. Filter Cartridge Size: Nominal 10” in diameter by 18” high with center perforated HDPE tube. Stormwater flows through media horizontally on a downward path through the filter/absorber cartridge before exiting the perforated tube. The cartridge shall slip over a perforated internal drain tube that exits through the bottom of the housing. The cartridge shall contain approximately 1,200 cubic inches of various absorbent material arranged primarily in layers. The outer surface of the cartridge shall be covered with a poly strainer fabric. Cartridge shall be easily removable for replacement. Drain tube with perforations may extend above filter/absorber portion to allow a minimum flow rate to deter standing water if unit becomes plugged or blinded.
2. Nominal Flow Rate: 15-40 gpm through clean filter/absorber cartridge. Unit features a large overflow opening area and space between housing, deflector and catch basin that allows for high overflow rates with minimum restriction during storm conditions. Overflow capable of passing several hundred gpm.
3. Nominal Flow Rate with Pre-Strainer: Where leaves and other surface material are anticipated, a pre-strainer can be used. Flow restriction can occur when pre-strainer is restricted or plugged.
4. Filter Housing: HDPE solid housing suitable for full height sediment containment and shall be nominal 15 gallons retention size. Smaller size capacity may be used on shallow catch basins. A perforated tube shall be incorporated within the housing to allow the filter/absorber cartridge to slip on for easy replacement. A locking screw-on-cap keeps cartridge in place during use. Use modified or shorter housing (with less storage, flow and filtration) where depth of catch basin is shallow or to suit basin.
5. Frame/Deflector: Each insert shall be fitted with a custom frame that directs incoming water from the grate inlet to the housing. Materials include HDPE or poly sheet and/or Type 304 SS sheet and frame.

OPERATION AND MAINTENANCE GUIDELINES

StormExx catch basin inserts are used to intercept stormwater as it passes through the grate. Heavy sediment items settle to the bottom of the housing and the collected water starts to rise and pass through the filter cartridge. As the rainfall rate increases, the water level may rise to the top of the cartridge. During high rainfall flow events excess untreated water will overflow the housing. **Note**: The most concentrated contaminants in stormwater generally occur at the beginning of each rain event. Stormwater treatment devices are frequently sized to treat this “first flush” event. Each site and installation may vary widely as to exposure to sediment, construction debris, landscaping and other pollutants.

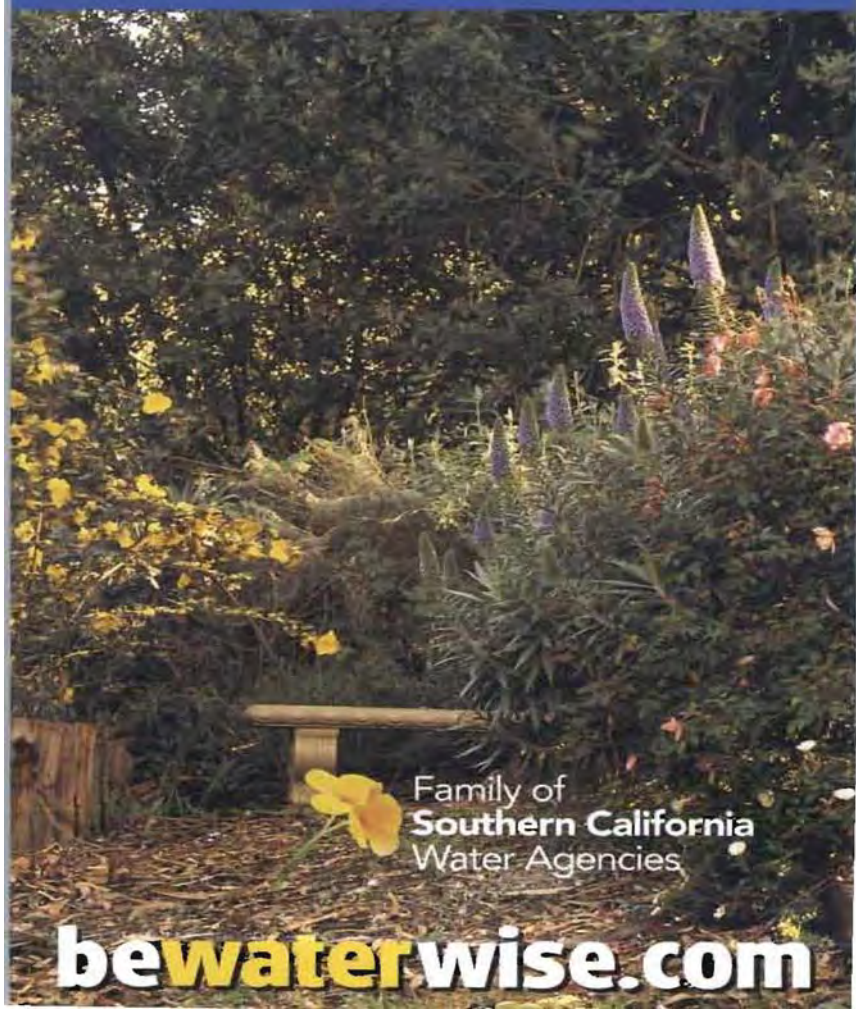
With periodic site inspections, the proper care and maintenance frequency may be determined for a proper service schedule. The StormExx inserts should be inspected during each season before and after rain events to ensure that the insert filter assembly is ready to accept and treat stormwater run-off. Keep the grate and area within 6’ of the grate clean and free of leaves, grass clippings, sediment and debris to minimize these contaminants from entering the unit housing. This is especially important during leaf fall season as decaying leaves on the filter cartridge can shorten filter life. Periodic visual inspections involve looking through the grate to see if any standing water exists. The collected water should drain through the filter cartridge that is designed for deep bed loading. As it becomes blinded or plugged with sediment, the flow rate capability will be reduced. Replace filter cartridge if standing water is in the housing. Maintenance schedules will vary with rainfall and pollutant concentration levels. Typical post-construction installations will require cartridge change-outs once or twice per year. If sediment reaches a height of 6” to 8” above bottom of the 24” housing, the sediment should be dumped and the filter cartridge inspected and replaced if necessary. Collected leaves, grass clippings, sediment, debris and spent filter cartridges that are not considered hazardous may be disposed of in on-site trash bins if approved by client. Cartridge disposal shall be in accordance with applicable rules and regulations.

Advanced Drainage Systems, Inc.
1-800-821-6710 www.ads-pipe.com

FLEXSTORM www.inletfilters.com

ADS “Terms and Conditions of Sale” are available on the ADS website, www.ads-pipe.com
The ADS logo and the Green Stripe are registered trademarks of Advanced Drainage Systems, Inc. FLEXSTORM is a registered trademark of Inlet & Pipe Protection, Inc. Filtrexx® and StormExx® are registered trademarks of Filtrexx International.
© 2019 Advanced Drainage Systems, Inc. 07/19 MH

10 Ways to Save Water Outdoors



TIP #1 The average homeowner uses twice the amount of water needed to keep plants healthy. Use the watering calculator and index at **bewaterwise.com** to know exactly how much water your plants need.

TIP #2 Check your sprinkler system for leaks, overspray and broken sprinkler heads. Update with drip or other more water-efficient sprinklers where appropriate.

TIP #3 This fall, plant a portion of your garden with beautiful native and California Friendly plants. Browse the plant database at **bewaterwise.com** to find just the right look for your outdoor spaces.

TIP #4 Reduce the amount of water-thirsty grass. Keep only what you need and replace the rest with less-thirsty plants or permeable paving.

TIP #5 For the grass you keep, set your lawnmower blade higher.

TIP #6 Adjust your sprinkler timer downward in September. Plants need less water when days are shorter.

TIP #7 Use a broom instead of the hose for cleaning sidewalks and patios.

TIP #8 Mulch! A layer of bark, gravel, compost, sawdust or low-growing groundcover evens out soil temperature and allows better water retention.

TIP #9 Check the list of invasive plants that hurt our environment at **caleppc.org** and remove any from your garden.

TIP #10 Share these tips with your gardener, neighbors and friends. Water conservation should be a part of every Southern Californian's lifestyle, but that doesn't mean we can't have lush and beautiful outdoor spaces.

bewaterwise.com

After the Storm

A Citizen's Guide to Understanding Stormwater

EPA 833-B-03-002

January 2003

Internet Address (URL) • HTTP://www.epa.gov
Recycled/Recyclable • Printed With Vegetable Oil Based Inks on 100% Postconsumer, Process Chlorine Free Recycled Paper

For more information contact:

or visit
www.epa.gov/npdes/stormwater
www.epa.gov/nps

Why is stormwater runoff a problem?

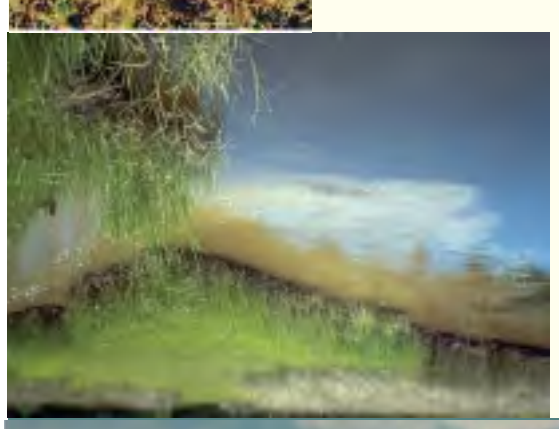


Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent stormwater from naturally soaking into the ground.



Stormwater can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.

The effects of pollution



Polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.

- Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats.
- Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.
- Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closures necessary.
- Debris—plastic bags, six-pack rings, bottles, and cigarette butts—washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.
- Polluted stormwater often affects drinking water sources. This, in turn, can affect human health and increase drinking water treatment costs.



Stormwater Pollution Solutions



Residential

Recycle or properly dispose of household products that contain chemicals, such as insecticides, pesticides, paint, solvents, and used motor oil and other auto fluids. Don't pour them onto the ground or into storm drains.

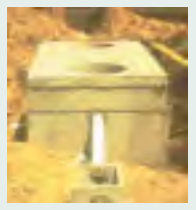
Lawn care



Excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.

- Don't overwater your lawn. Consider using a soaker hose instead of a sprinkler.
- Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Use organic mulch or safer pest control methods whenever possible.
- Compost or mulch yard waste. Don't leave it in the street or sweep it into storm drains or streams.
- Cover piles of dirt or mulch being used in landscaping projects.

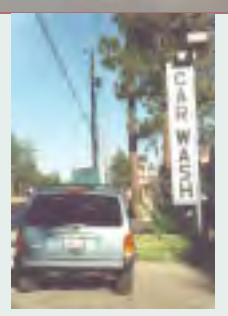
Septic systems



Leaking and poorly maintained septic systems release nutrients and pathogens (bacteria and viruses) that can be picked up by stormwater and discharged into nearby waterbodies. Pathogens can cause public health problems and environmental concerns.

- Inspect your system every 3 years and pump your tank as necessary (every 3 to 5 years).
- Don't dispose of household hazardous waste in sinks or toilets.

Auto care



Washing your car and degreasing auto parts at home can send detergents and other contaminants through the storm sewer system. Dumping automotive fluids into storm drains has the same result as dumping the materials directly into a waterbody.

- Use a commercial car wash that treats or recycles its wastewater, or wash your car on your yard so the water infiltrates into the ground.
- Repair leaks and dispose of used auto fluids and batteries at designated drop-off or recycling locations.

Pet waste



Pet waste can be a major source of bacteria and excess nutrients in local waters.

- When walking your pet, remember to pick up the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.



Education is essential to changing people's behavior. Signs and markers near storm drains warn residents that pollutants entering the drains will be carried untreated into a local waterbody.

Residential landscaping

Permeable Pavement—Traditional concrete and asphalt don't allow water to soak into the ground. Instead these surfaces rely on storm drains to divert unwanted water. Permeable pavement systems allow rain and snowmelt to soak through, decreasing stormwater runoff.

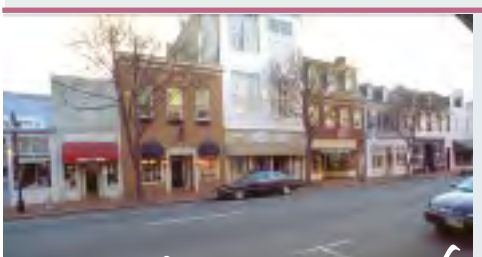


Rain Barrels—You can collect rainwater from rooftops in mosquito-proof containers. The water can be used later on lawn or garden areas.

Rain Gardens and Grassy Swales—Specially designed areas planted with native plants can provide natural places for rainwater to collect and soak into the ground. Rain from rooftop areas or paved areas can be diverted into these areas rather than into storm drains.



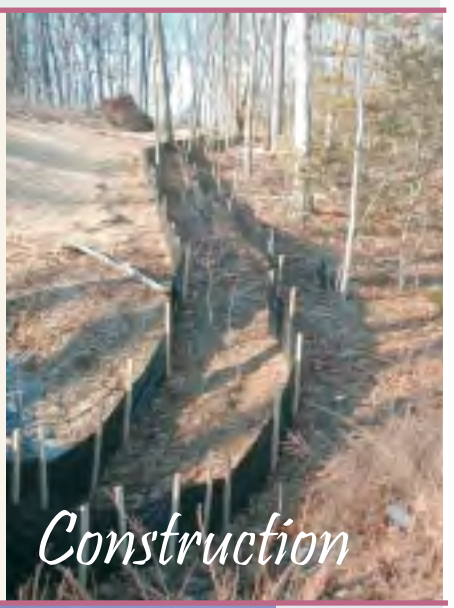
Vegetated Filter Strips—Filter strips are areas of native grass or plants created along roadways or streams. They trap the pollutants stormwater picks up as it flows across driveways and streets.



Commercial

Dirt, oil, and debris that collect in parking lots and paved areas can be washed into the storm sewer system and eventually enter local waterbodies.

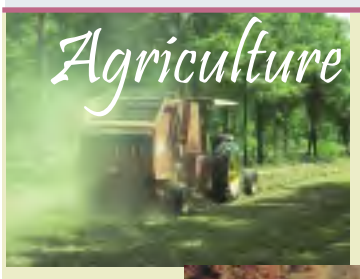
- Sweep up litter and debris from sidewalks, driveways and parking lots, especially around storm drains.
- Cover grease storage and dumpsters and keep them clean to avoid leaks.
- Report any chemical spill to the local hazardous waste cleanup team. They'll know the best way to keep spills from harming the environment.



Construction

Erosion controls that aren't maintained can cause excessive amounts of sediment and debris to be carried into the stormwater system. Construction vehicles can leak fuel, oil, and other harmful fluids that can be picked up by stormwater and deposited into local waterbodies.

- Divert stormwater away from disturbed or exposed areas of the construction site.
- Install silt fences, vehicle mud removal areas, vegetative cover, and other sediment and erosion controls and properly maintain them, especially after rainstorms.
- Prevent soil erosion by minimizing disturbed areas during construction projects, and seed and mulch bare areas as soon as possible.



Agriculture

Lack of vegetation on streambanks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local waterbodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, making them unsafe for human contact.



- Keep livestock away from streambanks and provide them a water source away from waterbodies.
- Store and apply manure away from waterbodies and in accordance with a nutrient management plan.
- Vegetate riparian areas along waterways.
- Rotate animal grazing to prevent soil erosion in fields.
- Apply fertilizers and pesticides according to label instructions to save money and minimize pollution.



Automotive Facilities

Uncovered fueling stations allow spills to be washed into storm drains. Cars waiting to be repaired can leak fuel, oil, and other harmful fluids that can be picked up by stormwater.

- Clean up spills immediately and properly dispose of cleanup materials.
- Provide cover over fueling stations and design or retrofit facilities for spill containment.
- Properly maintain fleet vehicles to prevent oil, gas, and other discharges from being washed into local waterbodies.
- Install and maintain oil/water separators.



Forestry

Improperly managed logging operations can result in erosion and sedimentation.

- Conduct preharvest planning to prevent erosion and lower costs.
- Use logging methods and equipment that minimize soil disturbance.
- Plan and design skid trails, yard areas, and truck access roads to minimize stream crossings and avoid disturbing the forest floor.
- Construct stream crossings so that they minimize erosion and physical changes to streams.
- Expedite revegetation of cleared areas.

For Information:

For information on “closed-loop” suppliers and recycling/disposal vendors, contact:
County of Riverside
Health Services Agency
Department of Environmental Health
at (909) 358-5055.

SPILL RESPONSE AGENCY:
HAZ-MAT: (909) 358-5055
AFTER 5:00 P.M.: (909) 358-5245 OR 911

RECYCLING AND HAZARDOUS WASTE DISPOSAL: (909) 358-5055

TO REPORT ILLEGAL DUMPING OR A CLOGGED STORM DRAIN: 1-800-506-2555

To order additional brochures or to obtain information on other pollution prevention activities, call: (909) 955-1111.

The Cities and County of Riverside
StormWater/CleanWater Protection Program
1-800-506-2555

StormWater CleanWater
PROTECTION PROGRAM

Riverside County gratefully acknowledges the Santa Clara Valley Nonpoint Source Pollution Control Program and the City of Los Angeles Stormwater Management Division for information provided in this brochure.

StormWater Pollution

What you should know for...

AUTOMOTIVE MAINTENANCE & CAR CARE



Best Management Practices (BMPS) for:

- Auto Body Shops
- Auto Repair Shops
- Car Dealerships
- Gas Stations
- Fleet Service Operations

StormWater Pollution . . . What You Should Know

Riverside County has two drainage systems - sanitary sewers and storm drains. The storm drain system is designed to help prevent flooding by carrying excess rainwater away from streets. Since the storm drain system does not provide for water treatment, it also serves the *unintended* function of transporting pollutants directly to our waterways.

Unlike sanitary sewers, storm drains are not connected to a treatment plant - they flow directly to our local streams, rivers and lakes.



Rain and water runoff from automotive shops and businesses can carry pollutant material into storm drains. Examples of pollutants include oil and grease from cars, copper and asbestos from worn brake linings, zinc from tires, and toxics from spilled fluids.

Stormwater pollution causes as much as 60% of our water pollution problem. It jeopardizes the quality of our waterways and poses a threat to groundwater resources if pollutants percolate through soil.

The Cities and County of Riverside StormWater/CleanWater Protection Program

Since preventing pollution is much easier, and less costly, than cleaning up “after the fact,” the Cities and County of Riverside StormWater/CleanWater Protection Program informs residents and businesses on pollution prevention activities such as the Best Management Practices (BMPs) described in this pamphlet.

The Cities and County of Riverside have adopted ordinances for stormwater management and discharge control. In accordance with state and federal law, these local stormwater ordinances **prohibit** the discharge of wastes into the storm drain system or local surface waters. This includes discharges containing oil, antifreeze, gasoline and other waste materials.

PLEASE NOTE: A common stormwater pollution problem associated with automotive shops and businesses is the hosing down of service bays, parking and other areas. Often, this activity flushes pollutants into the storm drain system. The discharges of pollutants is ***strictly prohibited*** by local ordinances and state and federal regulations.

Keep your shop in tune. Follow these Practices to help prevent stormwater pollution . . .

1. Changing Automotive Fluids

- Designate an area away from storm or sanitary drains to change automotive fluids.
- Collect, separate, and recycle motor oil, antifreeze, transmission fluid, and gear oil.
- Drain brake fluid and other non-recyclables into a proper container and handle as a hazardous waste.
- Use a radiator flushing fluid that can be recycled, and add it to the waste antifreeze.



2. Working on Transmissions, Engines, and Miscellaneous Repairs

- Keep a drip pan or a wide low-rimmed container under vehicles to catch fluids whenever you unclip hoses, unscrew filters, or change parts, to contain unexpected leaks.

3. Preventing Leaks and Spills

- Avoid spills by emptying and wiping drip pans when you move them to another vehicle or when they are half-full.
- Routinely check equipment to wipe up spills and repair leaks.
- Place large pans or an inflatable portable berm under wrecked cars.
- Drain all fluids from wrecked vehicles or "parts" cars you keep on site.

4. Cleaning up Spills

- Clean up small spills immediately using shop rags.



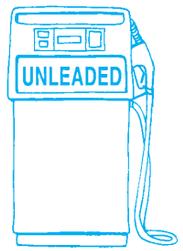
- Keep dry absorbent materials and/or a wet/dry vacuum cleaner on hand for mid-sized spills.
- Contain large spills immediately; block or shut off floor and parking lot drains and notify the authorities.
- Train employees to be familiar with hazardous spill response plans and emergency procedures.

5. Identify and Control Wastewater Discharges

- Ensure that shop sinks and floor drains are connected to the sanitary sewer. Check with the local sewer authority regarding permitting or other requirements.
- Post signs to prevent disposal of liquid wastes into sanitary drains.

6. Fueling Vehicles

- Clean-up minor spills, with a dry absorbent, rather than allowing them to evaporate. Dispose of the absorbent as a dry hazardous waste.
- Use a damp cloth and a damp mop to keep the area clean rather than a hose or a wet mop.

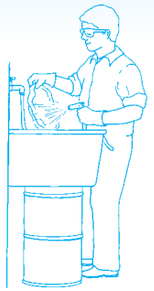


7. Removing and Storing Batteries

- Store batteries indoors, on an open rack.
- Return used batteries to a battery vendor.
- Contain cracked batteries to prevent hazardous spills.

8. Cleaning Parts

- Clean parts in a self-contained unit, solvent sink, or parts washer to prevent solvents and grease from entering a sewer or storm drain connection.



9. Metal Grinding and Finishing

- Catch metal filings in an enclosed unit or on a tarpaulin.
- Sweep filing area to prevent washing metals into floor drains.

10. Storing and Disposing of Waste

- Store recyclable and non-recyclable waste separately.
- Place liquid waste (hazardous or otherwise) within a bermed or secondary containment area.
- Cover outdoor storage areas to prevent contact with rain water.
- Collect used parts for delivery to a scrap metal dealer.

11. Selecting and Controlling Inventory

- Purchase recyclable or non-toxic materials.
- Select "closed-loop" suppliers and purchase supplies in bulk.

12. Outdoor Parking and Auto Maintenance

- Treat outdoor areas as an extension of your service bays or avoid using altogether.
- Sweep-up trash and dirt from outdoor parking and maintenance areas. Do not hose down areas. All non-storm water discharges are prohibited.
- Drain work areas to a sanitary drain rather than a storm drain. Contact the local sewer authority to determine if pretreatment is required.

13. Washing Vehicles, Cleaning Engines, and Other Steam Cleaning

- For occasional car exterior cleaning, minimize the water used and divert runoff to landscaped areas, keeping it out of the storm drain.
- Wash vehicles with biodegradable, phosphate-free detergent.
- Make sure no wastewater from engine or parts cleaning or steam cleaning is discharged where it may flow to a street, gutter, or storm drain.

14. Cleaning Work Areas

- Sweep or vacuum the shop floor frequently.
- Damp mop work areas - do not hose down work areas into the street or gutter.
- Do not pour mop water into the parking lot, street, gutter or storm drain.
- Use non-toxic cleaning products whenever possible.

Please remember:



Stormwater and the Construction Industry

Protect Natural Features



Bad

Good

- Minimize clearing.
- Minimize the amount of exposed soil.
- Identify and protect areas where existing vegetation, such as trees, will not be disturbed by construction activity.
- Protect streams, stream buffers, wild woodlands, wetlands, or other sensitive areas from any disturbance or construction activity by fencing or otherwise clearly marking these areas.

Construction Phasing



- Sequence construction activities so that the soil is not exposed for long periods of time.
- Schedule or limit grading to small areas.
- Install key sediment control practices before site grading begins.
- Schedule site stabilization activities, such as landscaping, to be completed immediately after the land has been graded to its final contour.

Vegetative Buffers

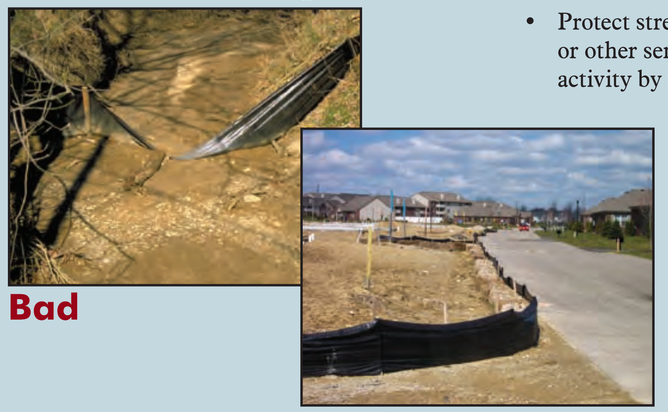


Bad

Good

- Protect and install vegetative buffers along waterbodies to slow and filter stormwater runoff.
- Maintain buffers by mowing or replanting periodically to ensure their effectiveness.

Silt Fencing



Bad

Good

- Inspect and maintain silt fences after each rainstorm.
- Make sure the bottom of the silt fence is buried in the ground.
- Securely attach the material to the stakes.
- Don't place silt fences in the middle of a waterway or use them as a check dam.
- Make sure stormwater is not flowing around the silt fence.

Maintain your BMPs!

IN RIVERSIDE COUNTY....Call 1-800-506-2555

TO REPORT ILLEGAL STORMDRAIN DISPOSAL

E-mail: Flood.fcnpdes@co.riverside.ca.us

Visit our website: www.floodcontrol.co.riverside.ca.us

Brought to you by the Storm Water/Clean Water Pollution Protection Program.....

REMEMBER, ONLY RAIN IN THE STORMDRAIN!

Site Stabilization



Bad

Good

- Vegetate, mulch, or otherwise stabilize all exposed areas as soon as land alterations have been completed.

Construction Entrances



Bad

Good

- Remove mud and dirt from the tires of construction vehicles before they enter a paved roadway.
- Properly size entrance BMPs for all anticipated vehicles.
- Make sure that the construction entrance does not become buried in soil.

Slopes



Bad

Good

- Rough grade or terrace slopes.
- Break up long slopes with sediment barriers, or under drain, or divert stormwater away from slopes.

Dirt Stockpiles



Bad

Good

- Cover or seed all dirt stockpiles.

Storm Drain Inlet Protection



Bad

Good

- Use rock or other appropriate material to cover the storm drain inlet to filter out trash and debris.
- Make sure the rock size is appropriate (usually 1 to 2 inches in diameter).
- If you use inlet filters, maintain them regularly.

www.epa.gov/npdes/menuofbmps

Stormwater and the Construction Industry

Planning and Implementing Erosion and Sediment Control Practices

The construction industry is a critical participant in the nation's efforts to protect streams, rivers, lakes, wetlands, and oceans. Through the use of best management practices (BMPs), construction site operators are the key defense against erosion and sedimentation.

As stormwater flows over a construction site, it picks up pollutants like sediment, debris, and chemicals. High volumes of stormwater can also cause stream bank erosion, and destroy downstream aquatic habitat. Preventing soil erosion and sedimentation is an important responsibility at all construction sites.

In addition to the environmental impact, uncontrolled erosion can have a significant financial impact on a construction project. It costs money and time to repair gullies, replace vegetation, clean sediment-clogged storm drains, replace poorly installed BMPs, and mitigate damage to other people's property or to natural resources.

Best Management Practice (BMP)
A BMP is a method used to prevent or control stormwater runoff and the discharge of pollutants, including sediment, into local waterbodies. Silt fences, inlet protection, and site-stabilization techniques are typical BMPs on a construction site.

Operator
An operator is someone who has control over and the ability to modify construction plans and specifications (e.g. owner, general contractor)

or

Someone who has control over the day-to-day operations at a site (e.g., owner, general contractor) that are necessary to ensure compliance with the permit requirements. It is the responsibility of a construction site owner or operator to contain stormwater runoff and prevent erosion during **all** stages of a project.

There may be more than one person at a site who meets these definitions and must apply for permit coverage. (States may have different definitions of the term "operator.")

So what's being done about polluted runoff?

The Clean Water Act includes the National Pollutant Discharge Elimination System (NPDES) permitting program. As of January 2003, 44 states and territories are authorized to issue NPDES stormwater permits. If your state isn't authorized to operate the NPDES stormwater permit program, EPA issues the permits. Permits vary from state to state, so contact your state or EPA for specific information. Your permitting authority has specific information on your state's NPDES stormwater permit program. In general, construction permits require construction operators to do all of the following:

- Develop and implement a stormwater pollution prevention plan
- Submit a permit application or notice of intent (NOI)
- Comply with the permit, including maintaining BMPs and inspecting the site

Under the NPDES program, construction activities that disturb 1 or more acres are required to obtain stormwater permit coverage. States have different names for the plans that construction operators must develop, such as

- Stormwater pollution prevention plan
- Erosion and sediment control plan
- Erosion control and stormwater management plan
- Stormwater management plan
- Water pollution control plan
- Pollution prevention plan

This document uses the term "*Plan*."

I think I need a permit... Where do I start?

All land-disturbing activities, including clearing, grading, and excavation, that disturb **1 or more acres** are required to be covered under a state or EPA-issued NPDES construction stormwater permit **prior to land disturbance**. Permit requirements vary by state. Begin by researching the specific requirements in your state. You might already be subject to local erosion and sediment control requirements, but that doesn't release you from the requirements of the NPDES program at the state or EPA level. Although you must comply with both sets of requirements, in most cases they have been designed to be complementary. Contact your permitting authority to find out exactly what you need to do. A good place to start your search is the Construction Industry Compliance Assistance web site at http://www.envcap.org/cica.

The NPDES permit requirements include small construction activities that are part of a larger common plan of development or sale, such as a single lot within a larger subdivision. For developments with multiple operators, all operators must have permit coverage for their individual parts of the larger development, no matter how large or small each operation happens to be. When there are multiple operators at one site, they're encouraged to develop and share one comprehensive Plan and obtain permit coverage as co-permitees.

The **owner or operator** of the construction site is responsible for complying with the requirements of the permit. Responsibilities include developing a Plan, obtaining permit coverage, implementing BMPs, and stabilizing the site at the end of the construction activity.

Construction sites that discharge unpermitted stormwater are in violation of the Clean Water Act and may be subject to fines of up to $27,500 a day per violation.

Determine your eligibility

All construction activity that disturbs 1 or more acres of land, as well as activity that disturbs less than 1 acre but is part of a larger common plan of development, must obtain permit coverage.

Read and understand your stormwater permit requirements

Get a copy of the permit for construction activities and a permit application (or notice of intent form) from your state or EPA permitting authority.

Develop a Plan

Most states do not require you to submit your Plan. However, you do need to keep the Plan on site. If that's impractical, you may post a notice that tells where the Plan is kept so it can be accessed by the permitting authority and other interested parties.

You'll need to post a copy of your completed application on site. Put it in a place where the public can see it so they'll know your site is covered by an NPDES permit!

Apply for permit coverage

Once you understand your permit requirements and have developed a Plan, you can submit a stormwater permit application (or notice of intent) to your permitting authority. This must be done before beginning any land disturbance on the site. Some states require a few days of lead time, so check with your permitting authority. Once you've submitted the application, you must satisfy the conditions of the permit.

Implement the Plan

Be prepared to implement the BMPs in your Plan before construction begins. Ensure that BMPs are properly maintained, and upgrade and repair them as necessary.

Developing and Implementing a Plan

You must have a Plan that includes erosion and sediment control and pollution prevention BMPs. These Plans require

- Advance planning and training to ensure proper implementation of the BMPs
- Erosion and sediment control BMPs in place until the area is permanently stabilized
- Pollution prevention BMPs to keep the construction site "clean"
- Regular inspection of the construction site to ensure proper installation and maintenance of BMPs

Fortunately, the practices and measures that must be included in your Plan are already part of the standard operating procedures at many construction sites.

Six steps are associated with developing and implementing a stormwater Plan. There's a wealth of information available on developing pollution prevention plans. Please contact your permitting authority for help in finding additional guidance materials, or visit www.epa.gov/npdes/stormwater. A sample construction plan is available at www.epa.gov/npdes/pubs/sample_swppp.pdf.

1. Site Evaluation and Design Development

- **Collect site information**
- **Develop site plan design**
- **Prepare pollution prevention site map**

The first step in preparing a Plan is to define the characteristics of the site and the type of construction that will occur. This involves collecting site information, identifying natural features that should be protected, developing a site plan design, describing the nature of the construction activity, and preparing a pollution prevention site map.

2. Assessment

- **Measure the site area**
- **Determine the drainage areas**
- **Calculate the runoff coefficient**

The next step is assessing the impact the project will have on stormwater runoff. Determine the drainage areas and estimate the runoff amounts and velocities. For more information on calculatng the runoff coefficient, go to www.epa.gov/npdes/pubs/chap02_conguide.pdf, page 11.

3. Control Selection and Plan Design

- **Review and incorporate state or local requirements**
- **Select erosion and sediment controls**
- **Select other controls**
- **Select stormwater management controls**
- **Indicate the location of controls on the site map**
- **Prepare an inspection and maintenance plan**
- **Coordinate controls with construction activity**
- **Prepare sequence of major activities**

In the third step you'll actually document your procedures to prevent and control polluted stormwater runoff. You must delineate areas that will not be disturbed, including critical natural areas like streamside areas, floodplains, and trees. You must also identify the measures (or BMPs) you'll use to protect these areas.

Phasing your project to minimize the amount of exposed soil at any given time is a highly effective way to prevent erosion. Erosion control measures designed to prevent soil from being mobilized include diversions to route stormwater away from exposed soils and stabilization with vegetation, mulch, and geotextiles. Sedimentation control measures designed to remove sediment from stormwater or prevent it from leaving the site include silt fences, sediment traps, and diversions.

You'll need to select erosion and sediment controls—including stabilization measures for protecting disturbed areas and structural controls for diverting run-off and removing sediment—that are appropriate for your particular site. The appropriateness of the control measures will depend on several factors, but will be influenced most directly by the site characteristics. Some stabilization measures you might consider are temporary seeding, permanent seeding, and mulching. Structural control measures include earth dikes, silt fences, and sediment traps. No single BMP will meet all of the erosion and sedimentation control needs of a construction site. A combination of BMPs is necessary. For more information on the types of BMPs appropriate for your construction site, see the BMP fact sheet series available at www.epa.gov/npdes/menuofbmps.

Soil erosion control tips...

- Design the site to infiltrate stormwater into the ground and to keep it out of storm drains. Eliminate or minimize the use of stormwater collection and conveyance systems while maximizing the use of stormwater infiltration and bioretention techniques.
- Minimize the amount of exposed soil on site.
  - To the extent possible, plan the project in stages to minimize the amount of area that is bare and subject to erosion. The less soil exposed, the easier and cheaper it will be to control erosion.
  - Vegetate disturbed areas with permanent or temporary seeding immediately upon reaching final grade.
  - Vegetate or cover stockpiles that will not be used immediately.
- Reduce the velocity of stormwater both onto and away from the project area.
  - Interceptors, diversions, vegetated buffers, and check dams are a few of the BMPs that can be used to slow down stormwater as it travels across and away from the project site.
  - Diversion measures can also be used to direct flow away from exposed areas toward stable portions of the site.
  - Silt fences and other types of perimeter filters should never be used to reduce the velocity of runoff.
- Protect defined channels immediately with measures adequate to handle the storm flows expected.
  - Sod, geotextile, natural fiber, riprap, or other stabilization measures should be used to allow the channels to carry water without causing erosion. Use softer measures like geotextile or vegetation where possible to prevent downstream impacts.
- Keep sediment on site.
  - Place aggregate or stone at construction site vehicle exits to accommodate at least two tire revolutions of large construction vehicles. Much of the dirt on the tires will fall off before the vehicle gets to the street.
  - Regular street sweeping at the construction entrance will prevent dirt from entering storm drains. Do not hose paved areas.
  - Sediment traps and basins are temporary structures and should be used in conjunction with other measures to reduce the amount of erosion.
- Maintaining all BMPs is critical to ensure their effectiveness during the life of the project.
  - Regularily remove collected sediment from silt fences, berms, traps, and other BMPs.
  - Ensure that geotextiles and mulch remain in place until vegetation is well established.
  - Maintain fences that protect sensitive areas, silt fences, diversion structures, and other BMPs.

Other BMPs and Activities to Control Polluted Runoff

You'll need to select other controls to address potential pollutant sources on your site. Construction materials, debris, trash, fuel, paint, and stockpiles become pollution sources when it rains. Basic pollution prevention practices can significantly reduce the amount of pollution leaving construction sites. The following are some simple practices that should be included in the Plan and implemented on site:

- Keep potential sources of pollution out of the rain as practicable (e.g., inside a building, covered with plastic or tarps, or sealed tightly in a leak-proof container).
- Clearly identify a protected, lined area for concrete truck washouts. This area should be located away from streams, storm drain inlets, or ditches and should be cleaned out periodically.
- Park, refuel, and maintain vehicles and equipment in one area of the site to minimize the area exposed to possible spills and fuel storage. This area should be well away from streams, storm drain inlets, or ditches. Keep spill kits close by and clean up any spills or leaks immediately, including spills on pavement or earthen surfaces.
- Practice good housekeeping. Keep the construction site free of litter, construction debris, and leaking containers. Keep all waste in one area to minimize cleaning.
- Never hose down paved surfaces to clean dust, debris, or trash. This water could wash directly into storm drains or streams. Sweep up materials and dispose of them in the trash. Never bury trash or debris!
- Dispose of hazardous materials properly.

4. Certification and Notification

- **Certify the Plan**
- **Submit permit application or notice of intent**

Once the Plan has been developed, an authorized representative must sign it. Now is the time to submit the permit application or notice of intent. Your permit might require that the Plan be kept on site, so be sure to keep it available for the staff implementing the Plan.

Erosion and sedimentation control practices are only as good as their installation and maintenance.

5. Implementing and Maintaining a Plan

- **Implement controls**
- **Inspect and maintain controls**
- **Update/change the Plan**
- **Report releases of hazardous materials**

A Plan describes the practices and activities you'll use to prevent stormwater contamination and meet the NPDES permit requirements. Make sure that the Plan is implemented and that the Plan is updated as necessary to reflect changes on the site.

Erosion and sedimentation control practices are only as good as their installation and maintenance. Train the contractors that will install the BMPs and inspect immediately to ensure that the BMPs have been installed correctly.

Regularly inspect the BMPs (especially before and after rain events) and perform any necessary repairs or maintenance immediately. Many BMPs are designed to handle a limited amount of sediment. If not maintained, they'll become ineffective and a source of sediment pollution.

It's also important to keep records of BMP installation, implementation, and maintenance. Keep track of major grading activities that occur on the site, when construction activities cease (temporarily or permanently), and when a site is temporarily or permanently stabilized.

If construction plans change at any time, or if more appropriate BMPs are chosen for the site, update the Plan accordingly.

6. Completing the Project: Final Stabilization and Termination of the Permit

- **Final stabilization**
- **Notice of Termination**
- **Record retention**

Many states and EPA require a Notice of Termination (NOT) or other notification signifying that the construction activity is completed. An NOT is required when

- Final stabilization has been achieved on all portions of the site for which the permittee is responsible.
- Another operator has assumed control over all areas of the site that have not been finally stabilized. That operator would need to submit a new permit application to the permitting authority.
- For residential construction only, temporary stabilization of a lot has been completed prior to transference of ownership to the homeowner, with the homeowner being made aware of the need to perform final stabilization.

Permittees must keep a copy of their permit application and their Plan for at least 3 years following final stabilization. This period may be longer depending on state and local requirements.

Preconstruction Checklist

- A site description, including
  - Nature of the activity
  - Intended sequence of major construction activities
  - Total area of the site
  - Existing soil type and rainfall runoff data
  - A site map with:
    - Drainage patterns
    - Approximate slopes after major grading
    - Area of soil disturbance
    - Outline of areas which will not be disturbed
    - Location of major structural and nonstructural soil erosion controls
    - Areas where stabilization practices are expected to occur
    - Surface waters
    - Stormwater discharge locations
  - Name of the receiving water(s)
- A description of controls:
  - Erosion and sediment controls, including
    - Stabilization practices for all areas disturbed by construction
    - Structural practices for all drainage/discharge locations
  - Stormwater management controls, including
    - Measures used to control pollutants occurring in stormwater discharges after construction activities are complete
    - Velocity dissipation devices to provide nonerosive flow conditions from the discharge point along the length of any outfall channel
  - Other controls, including
    - Waste disposal practices that prevent discharge of solid materials
    - Measures to minimize offset tracking of sediments by construction vehicles
    - Measures to ensure compliance with state or local waste disposal, sanitary sewer, or septic system regulations
  - Description of the timing during the construction when measures will be implemented
- State or local requirements incorporated into the Plan
- Inspection and maintenance procedures for control measures identified in the Plan
- Contractor certification and Plan certification

Implementation Checklist

- Maintain records of construction activities, including
  - Dates when major grading activities occur
  - Dates when construction activities temporarily cease on the site or a portion of the site
  - Dates when construction activities permanently cease on the site or a portion of the site
  - Dates when stabilization measures are completed on the site
- Prepare inspection reports summarizing
  - Name of person conducting BMP inspections
  - Qualifications of person conducting BMP inspections
  - BMPs/areas inspected
  - Observed conditions
  - Necessary changes to the Plan
- Report releases of reportable quantities of oil or hazardous materials
  - Notify the National Response Center at 800-424-8802 immediately
  - Report releases to your permitting authority immediately, or as specified in your permit. You must also provide a written report within 14 days.
  - Modify the Plan to include
    - The date of release
    - Circumstances leading to the release
    - Steps taken to prevent reoccurrence of the release
- Modify Plan as necessary
  - Incorporate requests of the permitting authority to bring the Plan into compliance
  - Address changes in design, construction operation, or maintenance that affect the potential for discharge of pollutants

An ounce of prevention is worth a pound of cure! It's far more efficient and cost-effective to prevent pollution than it is to try to correct problems later. Installing and maintaining simple BMPs and pollution prevention techniques on site can greatly reduce the potential for stormwater pollution and can also save you money!

Visit www.epa.gov/npdes/stormwater for more information.

StormWater CleanWater PROTECTION PROGRAM



RIVERSIDE COUNTY
ANIMAL SERVICES LOCATIONS:

www.rcdas.org

BLYTHE
16450 West Hobson Way
Blythe, CA 92225
760-921-7857

COACHELLA VALLEY ANIMAL CAMPUS
72-050 Petland Place
Thousand Palms, CA 92276
760-343-3644

RIVERSIDE COUNTY ANIMAL SERVICES
6851 Van Buren Blvd.
Riverside, CA 92509
951-688-4340

OTHER ANIMAL SHELTERS:

ANIMAL CARE CENTER OF INDIO
45-355 Van Buren
Indio, CA 92201
760-391-4138

ANIMAL FRIENDS OF THE VALLEYS
29001 Bastron Avenue
Lake Elsinore, CA 92530
951-674-0618
(Serving incorporated Temecula, Wildomar, Lake Elsinore, Murrieta and Canyon Lake)

MARY S. ROBERTS PET ADOPTION CENTER
6185 Industrial Avenue
Riverside, CA 92504
951-688-4340

RAMONA HUMANE SOCIETY
690 Humane Way
San Jacinto 92586
951-654-8002
(Serving Sun City, Menifee, Romoland and Homeland)

Looking to adopt a pet?
This website is linked to many animal shelters.
www.petfinder.com

To report illegal storm drain disposal, call
1-800-506-2555

Or visit our website at www.rcflood.org

E-mail fcnpdes@rcflood.org

What's the Scoop?



Tips for a Healthy Pet and a Healthier Environment

CREATE A HEALTHY ENVIRONMENT in and around your home by following these simple pet practices. Your pet, family and neighbors will appreciate their clean comfortable surroundings.

HOUSEHOLD PETS

We all love our pets, but pet waste is a subject everyone likes to avoid. Pet waste left on trails, sidewalks, streets and grassy areas can be washed into the nearest waterway when it rains. Even if you can't see streams or lakes near you, rainfall (stormwater) or sprinkler runoff can wash pet waste into the storm drains that carry runoff to the nearest streams or lakes untreated. The risk of stormwater contamination increases if pet waste is allowed to accumulate in outdoor animal pen areas or left on sidewalks, streets or driveways.



Pet waste contains nutrients and bacteria. Nutrients can promote the growth of algae in streams and lakes. Algae can cause fish kills and other environmental damage if it is fed too many nutrients. Pet Waste also contains e. Coli and fecal bacteria, which can cause disease in other animals and humans that come in contact with it when swimming or splashing in streams and lakes. Dogs also carry salmonella and giardia, which can make people sick.

Pet waste that is not picked up and properly disposed can also increase vector problems. Flies and other insects are not only attracted to and feed on pet waste, but can also be infected with diseases and spread those diseases to humans and other animals.

WHAT CAN YOU DO?

- SCOOP up pet waste and flush it down the toilet or place in trash can.
- NEVER DUMP pet waste into a storm drain or catch basin.
- USE the complimentary bags or mutt mitts offered in dispensers at local parks.
- CARRY EXTRA BAGS when walking your dog and make them available to other pet owners who are without.
- TEACH CHILDREN how to properly clean up after a pet.
- TELL FRIENDS AND NEIGHBORS about the ill effects of animal waste on the environment. Encourage them to clean up after pets.

Call 1-800-506-2555 TOLL FREE to report illegal dumping to the storm drain, find the dates and times of local Household Hazardous Waste Collection Events, obtain additional information on stormwater problems and solutions, request presentations about stormwater pollution in your child's classroom, or learn about free grasscycling and composting workshops.

SCOOP THE POOP



Many communities have "Scoop the Poop" laws that govern pet waste cleanup. Some of these laws specifically require anyone who walks an animal off their property to carry a bag, shovel, or scooper. Any waste left by the animal must be cleaned up immediately. CALL YOUR LOCAL CODE ENFORCEMENT OFFICE to find out more about pet waste regulations.

OTHER WAYS TO PROTECT YOUR PETS AND THE ENVIRONMENT

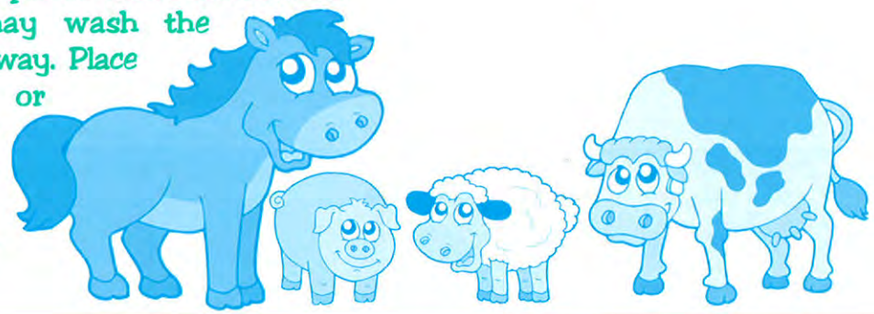
Pets are only one of many sources that contribute to water pollution. However, these other sources of water pollution cannot only harm the environment but also harm your pet. Improperly used or stored lawn fertilizers, pesticides, soaps, grease and vehicle fluids cannot only be washed into local streams and lakes, these chemicals can also harm your pet if they ingest or touch these chemicals. Call 1-800-506-2555 for information regarding how to properly dispose of household hazardous wastes such as these. You can also keep your pets and our environment healthy by properly maintaining your vehicles, and limiting use of pesticides and fertilizers to only the amount that is absolutely needed.

Make sure to not only protect your pets, but to also protect your neighbors pets. NEVER HOSE VEHICLE FLUIDS into the street or gutter. USE ABSORBENT MATERIALS such as cat litter to clean-up spills. SWEEP UP used absorbent materials and place it in the trash.

HORSES AND LIVESTOCK

Fortunate enough to own a horse or livestock? You, too, can play a part in protecting and cleaning up our water resources. The following are a few simple Best Management Practices (BMPs) specifically designed for horses and livestock.

- STORE your manure properly. Do not store unprotected piles of manure in places where stormwater runoff may wash the manure away. Place a cover or tarp over the pile to keep rainwater out.



- BUILD a manure storage facility to protect your pets, property and the environment. These structures usually consist of a concrete pad to protect groundwater and a short wall on one or two sides to make manure handling easier.

- READ the Only Rain Down the Storm Drain brochure titled "Tips for Horse Care" for additional guidance and recommendations. This brochure should be available from your local city office or for download at www.rcflood.org/stormwater.

- KEEP animals out of streams - Horses and livestock can deficate in streams causing stormwater pollution. Livestock and horses in streams can also disturb sensitive habitat and vegetation, causing additional environmental damage. Keep livestock and horses away from streams and use designated stream crossings whenever possible.

- MATERIAL STORAGE SAFETY TIPS Many of the chemicals found in barns require careful handling and proper disposal. When using these chemicals, be certain to follow these common sense guidelines:
  - Buy only what you need.
  - Treat spills of hoof oils like a fuel spill. Use kitty litter to soak up the oil and dispose of it in a tightly sealed plastic bag.
  - Store pesticides in a locked, dry, well-ventilated area.
  - Protect stored fertilizer and pesticides from rain and surface water.

RESOURCE CONSERVATION DISTRICTS CAN HELP

Call 1-800-506-2555 for assistance with locating a local conservation district that can help you properly manage your manure, re-establish healthy pastures, control weeds, or identify appropriate grasses for your soils.



Thank you for doing your part to protect your watershed, the environment, your pets and your community!

For Information:

For information on “closed-loop” suppliers and recycling/disposal vendors, contact:
County of Riverside
Health Services Agency
Department of Environmental Health
at (909) 358-5055.

SPILL RESPONSE AGENCY:
HAZ-MAT: (909) 358-5055
AFTER 5:00 P.M.: (909) 358-5245 OR 911

HAZARDOUS WASTE DISPOSAL: (909) 358-5055

RECYCLING INFORMATION: 1-800-366-SAVE

TO REPORT ILLEGAL DUMPING OR A CLOGGED STORM DRAIN: 1-800-506-2555

To order additional brochures or to obtain information on other pollution prevention activities, call: (909) 955-1111.

The Cities and County of Riverside
StormWater/CleanWater Protection Program
1-800-506-2555

StormWater CleanWater
PROTECTION PROGRAM

Riverside County gratefully acknowledges the Santa Clara Valley Nonpoint Source Pollution Control Program, Alameda Countywide Clean Water Program and the San Bernardino County Stormwater Program for information provided in this brochure.

StormWater Pollution

What you should know for...

THE FOOD SERVICE INDUSTRY



Best Management Practices (BMPS) for:

- Restaurants
- Grocery Stores
- Delicatessens
- Bakeries

StormWater Pollution . . . What You Should Know

Riverside County has two drainage systems - sanitary sewers and storm drains. The storm drain system is designed to help prevent flooding by carrying excess rainwater away from streets. Since the storm drain system does not provide for water treatment, it also serves the *unintended* function of transporting pollutants directly to our waterways.

Unlike sanitary sewers, storm drains are not connected to a treatment plant - they flow directly to our local streams, rivers and lakes.



Waste or washwater generated by the food service industry often contains materials such as food wastes, oil, grease, detergents, and degreasers. These materials can degrade local waters when allowed to flow into a storm drain system.

Stormwater pollution causes as much as 60% of our water pollution problem. It jeopardizes the quality of our waterways and poses a threat to groundwater resources if pollutants percolate through soil.

The Cities and County of Riverside StormWater/CleanWater Protection Program

Since preventing pollution is much easier, and less costly, than cleaning up “after the fact,” the Cities and County of Riverside StormWater/CleanWater Protection Program informs residents and businesses on pollution prevention activities such as the Best Management Practices (BMPs) described in this pamphlet.

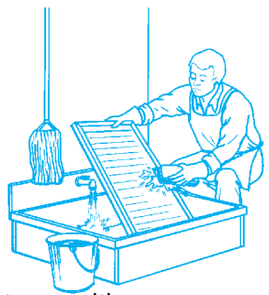
The Cities and County of Riverside have adopted ordinances for stormwater management and discharge control. In accordance with state and federal law, these local stormwater ordinances **prohibit** the discharge of wastes into the storm drain system or local surface waters. This includes discharges from the food service industry containing food wastes, oil, grease, detergents, and degreasers.

PLEASE NOTE: A common stormwater pollution problem associated with the food service industry is the discharge of washwater into alleys and gutters, and the hosing down of outdoor areas. Often, these activities flush pollutants into the storm drain system. The discharges of pollutants is ***strictly prohibited*** by local ordinances and state and federal regulations.

A Menu of Activities . . . to Keep Our Water Clean

Cleanin' It Right . . .

Pour mop and wash water into the mop sink or down floor drains . . . not into gutters, alleys, parking lots or a storm drain. Wash greasy equipment only in designated wash areas which are properly connected to the sewer system with an appropriate oil/water separator. Also, avoid washing kitchen mats, garbage containers, and other items in areas where wastewater is likely to flow into a storm drain.



Watch Out For Spills . . .

Use dry methods for spill cleanup. Don't hose down outside spills. Use rags or absorbents such as cat litter and then dispose of in the garbage, or handle as hazardous waste as appropriate. If necessary, mop the area with a minimum amount of water.



Proper Storage and Disposal . . .

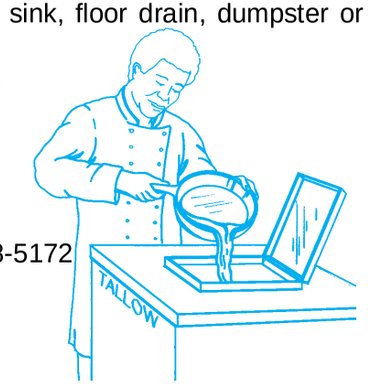
General cleaners, floor cleaners, solvents, and detergents often contain toxic substances. Read labels carefully and store and dispose of these products properly.

REMEMBER: Don't throw toxic waste into the trash or into a storm drain. To report toxic spill call 911. For information on hazardous waste pick-up call (909) 358-5055.



Grease and Oil . . .

Handle and dispose of grease properly. Save used cooking grease and oil for recycling in tallow bins or sealed containers. Never pour grease into a sink, floor drain, dumpster or storm drain. Watch out for, and report to management, overflowing grease interceptors. Call (909) 358-5172 for disposal information.



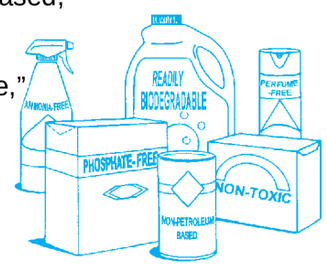
How 'Bout That Dumpster . . .

Keep dumpster and loading dock areas clean. Control litter by sweeping - don't hose down the area. Replace leaky dumpsters and keep lids closed to keep out rainwater.



Use Water-Friendly Products . . .

Whenever possible, purchase water-based cleaning products. Look for products labeled "non-toxic," "non-petroleum based," "ammonia-free," "phosphate-free," and "perfume-free," or "readily biodegradable."



Outdoor/Sidewalk Areas . . .

Sweep up food particles, cigarette butts, and trash from outdoor dining areas before rinsing or steam cleaning. Don't use toxic bleaches or detergents when you pressure wash outdoor dining areas, entrances or surrounding sidewalk areas.



***You may be** already implementing many of the BMPs prescribed in this brochure. However, if you discover any potential problem areas, please consider using one or more of the recommended BMPS.*

***Also,** please note that the Riverside County Environmental Health Department will monitor potential sources of stormwater pollution activities during regularly scheduled inspections of food service facilities. If Health Department staff observe activities which may be contributing to stormwater pollution, suggestions will be provided and/or use of prescribed BMPS listed in this brochure will be offered.*

Please remember:

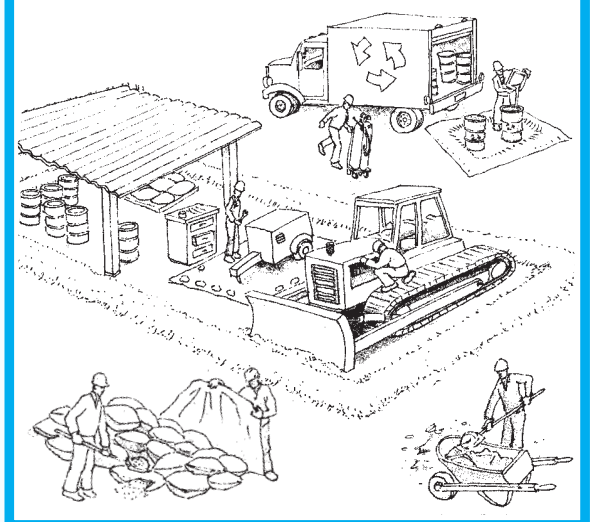


Everyone contributes a little to the problem of stormwater pollution. Now it's time for all of us to become part of the solution!

StormWater Pollution

What you should know for...

GENERAL CONSTRUCTION & SITE SUPERVISION



Best Management Practices (BMPs) for:

- Developers
- General Contractors
- Home Builders
- Construction Inspectors
- Anyone in the construction business

To report a hazardous materials spill, call:

Riverside County Hazardous Materials
Emergency Response Team
(909) 358-5055 8:00 a.m. – 5:00 p.m.
(909) 358-5245 after 5:00 p.m.

In an emergency call: **911**

For recycling and hazardous waste disposal, call:

(909) 358-5055

To report an illegal dumping or a clogged storm drain, call:

1-800-506-2555

To order additional brochures or to obtain information on other pollution prevention activities, please call (909) 955-1200 or visit the StormWater/CleanWater Protection Program website at:
www.co.riverside.ca.us/depts/flood/waterquality npdes.asp

StormWater CleanWater
PROTECTION PROGRAM

The StormWater/CleanWater Protection Program gratefully acknowledges the Santa Clara Valley Nonpoint Pollution Control Program, Alameda Countywide CleanWater Program and the City of Los Angeles Stormwater Management Division for information provided in this brochure.

Resources

State Water Resources Control Board
Division of Water Quality
1001 I Street
Sacramento CA 95814
(916) 341-5455
www.swrcb.ca.gov/stormwtr/

Colorado River Basin Regional Water
Quality Control Board - Region 7
73-720 Fred Waring Drive, Suite 100
Palm Desert, CA 92260
(760) 346-7491
www.swrcb.ca.gov/~rwqcb7/

Santa Ana Regional Water
Quality Control Board - Region 8
3737 Main Street, Suite 500
Riverside, CA 92501-3348
(909) 782-4130
www.swrcb.ca.gov/~rwqcb8/

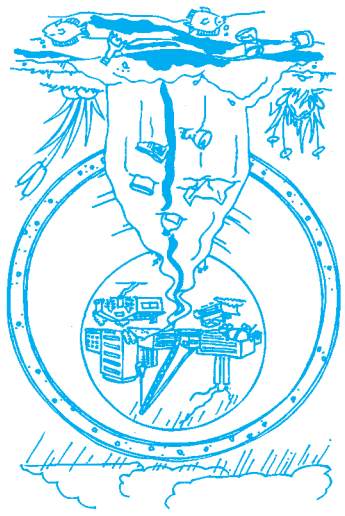
San Diego Regional Water
Quality Control Board - Region 9
9771 Clairemont Mesa Blvd., Suite A
San Diego, CA 92124
(858) 467-2952
www.swrcb.ca.gov/~rwqcb9/

StormWater Pollution . . . What You Should Know

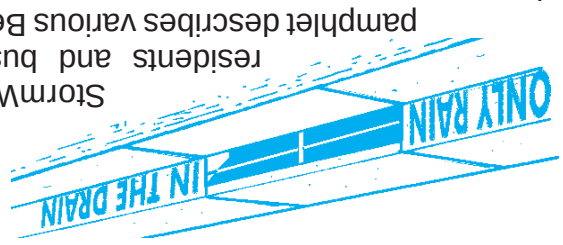
Riverside County has two drainage systems - sewers and storm drains. The storm drain system was designed to reduce flooding by carrying excess rainwater away from streets and developed areas. Since the storm drain system does not provide for water treatment, it also serves the *unintended* function of transporting pollutants directly to our local waterways.

Unlike sanitary sewers, storm drains are not connected to a wastewater treatment plant – they flow directly to our local streams, rivers and lakes.

Stormwater runoff is a part of the natural hydrologic process. However, land development and construction activities can significantly alter natural drainage processes and introduce pollutants into stormwater runoff. Polluted stormwater runoff from construction sites has been identified as a major source of water pollution in California. It jeopardizes the quality of our local waterways and can pose a serious threat to the health of our aquatic ecosystems.



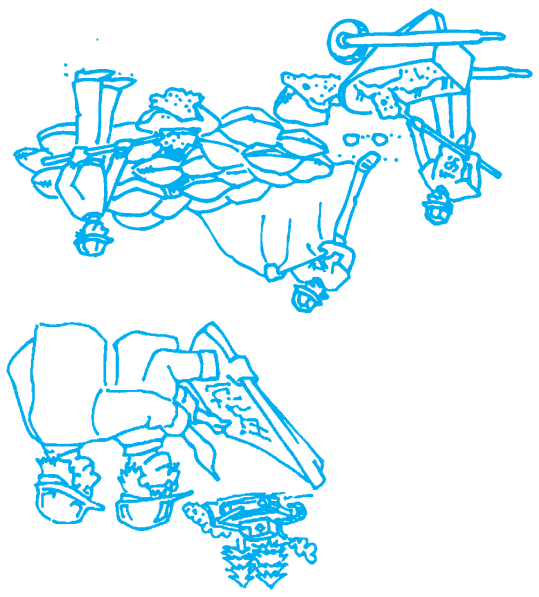
The Cities and County of Riverside StormWater/CleanWater Protection Program



Because preventing pollution is much easier and less costly than cleaning up "after the fact," the Cities and County of Riverside StormWater/CleanWater Protection Program informs residents and businesses on pollution prevention activities. This pamphlet describes various Best Management Practices (BMPs) that construction site operators can use to prevent stormwater pollution.

In accordance with applicable federal and state law, the Cities and County of Riverside have adopted ordinances for stormwater management and discharge control that **prohibit** the discharge of pollutants into the storm drain system or local surface water. This includes discharges from construction sites containing sediment, concrete, mortar, paint, solvents, lubricants, vehicle fluids, fuel, pesticides, and construction debris.

PLEASE NOTE: The Federal, State and local regulations strictly prohibit the discharge of sediment and pollutants into the streets, the storm drain system or waterways. As an owner, operator or supervisor of a construction site, you may be held financially responsible for any environmental damage caused by your subcontractors or employees.



STORMWATER POLLUTION FROM CONSTRUCTION ACTIVITIES

The two most common sources of stormwater pollution problems associated with construction activities are ***erosion*** and ***sedimentation***. Failure to maintain adequate erosion and sediment controls at construction sites often results in sediment discharges into the storm drain system, creating multiple problems once it enters local waterways.

Construction vehicles and heavy equipment can also track significant amounts of mud and sediment onto adjacent streets. Additionally, wind may transport construction materials and wastes into streets storm drains, or directly into our local waterways.

What Should You Do?

Advance Planning to Prevent Pollution

- ❑ Remove existing vegetation only as needed.
- ❑ Schedule excavation, grading, and paving operations for dry weather periods, if possible.
- ❑ Designate a specific area of the construction site, well away from storm drain inlets or watercourses, for material storage and equipment maintenance.
- ❑ Develop and implement an effective combination of erosion and sediment controls for the construction site.
- ❑ Practice source reduction by ordering only the amount of materials that are needed to finish the project.
- ❑ Educate your employees and subcontractors about stormwater management requirements and their pollution prevention responsibilities.
- ❑ Control the amount of surface runoff at the construction site by impeding internally generated flows and using berms or drainage ditches to direct incoming offsite flows to go around the site. ***Note:*** *Consult local drainage policies for more information.*

Best Management Practices

The following Best Management Practices (BMPs) can significantly reduce pollutant discharges from your construction site. Compliance with stormwater regulations can be as simple as minimizing stormwater contact with potential pollutants by providing covers and secondary containment for construction materials, designating areas away from storm drain systems for storing equipment and materials and implementing good housekeeping practices at the construction site.

- ❑ Protect all storm drain inlets and streams located near the construction site to prevent sediment-laden water from entering the storm drain system.
- ❑ Limit access to and from the site. Stabilize construction entrances/exits to minimize the track out of dirt and mud onto adjacent streets. Conduct frequent street sweeping.
- ❑ Protect stockpiles and construction materials from winds and rain by storing them under a roof, secured impermeable tarp or plastic sheeting.
- ❑ Avoid storing or stockpiling materials near storm drain inlets, gullies or streams.
- ❑ Phase grading operations to limit disturbed areas and duration of exposure.
- ❑ Perform major maintenance and repairs of vehicles and equipment offsite.
- ❑ Wash out concrete mixers only in designated washout areas at the construction site.
- ❑ Set-up and operate small concrete mixers on tarps or heavy plastic drop cloths.
- ❑ Keep construction sites clean by removing trash, debris, wastes, etc. on a regular basis.
- ❑ Clean-up spills immediately using dry clean-up methods (e.g., absorbent materials such as cat litter, sand or rags for liquid spills; sweeping for dry spills such as cement, mortar or fertilizer) and by removing the contaminated soil from spills on dirt areas. .
- ❑ Prevent erosion by implementing any or a combination of soil stabilization practices such as mulching, surface roughening, permanent or temporary seeding.
- ❑ Maintain all vehicles and equipment in good working condition. Inspect frequently for leaks, and repair promptly.
- ❑ Practice proper waste disposal. Many construction materials and wastes, including solvents, water-based paint, vehicle fluids, broken asphalt and concrete, wood, and cleared vegetation can be recycled. Materials that cannot be recycled must be taken to an appropriate landfill or disposed of as hazardous waste.
- ❑ Cover open dumpsters with secured tarps or plastic sheeting. Never clean out a dumpster by washing it down on the construction site.
- ❑ Arrange for an adequate debris disposal schedule to insure that dumpsters do not overflow.

General Construction Activities Stormwater Permit

(Construction Activities General Permit)

The State Water Resources Control Board (SWRCB) adopted a new Construction Activities General Permit (WQ Order No. 99-08DWQ) on August 19, 1999, superseding the now expired SWRCB statewide General Permit (WQ Order No. 92-08DWQ). This permit is administered and enforced by the SWRCB and the local Regional Water Quality Control Boards (RWQCB). The updated Construction Activities General Permit establishes a number of new stormwater management requirements for construction site operator.

NOTE: *Some construction activies stormwater permits are issued on a regional basis. Consult your local RWQCB to find out if your project requires coverage under any of these permits.*

Frequently Asked Questions:

Does my construction site require coverage under the Construction Activities General Permit?

Yes, if construction activity results in the disturbance of five or more acres of total land area or is part of a common plan of development that results in the disturbance of five or more acres.

How do I obtain coverage under the Construction Activities General Permit?

Obtain the permit package and submit the completed Notice of Intent (NOI) form to the SWRCB prior to grading or disturbing soil at the construction site. For ongoing construction activity involving a change of ownership, the new owner must submit a new NOI within 30 days of the date of change of ownership. The completed NOI along with the required fee should be mailed to the SWRCB.

What must I do to comply with the requirements of the Construction Activities General Permit?

- ● Implement BMPs for non-stormwater discharges year-round.
- ● Prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) prior to commencing construction activities.
- ● Keep a copy of the SWPPP at the construction site for the entire duration of the project.
- ● Calculate the anticipated stormwater run-off.
- ● Implement an effective combination of erosion and sediment control on all soil disturbed areas.
- ● Conduct site inspections prior to anticipated storm events, every 24-hours during extended storm events, and after actual storm event.
- ● Perform repair and maintenance of BMPs as soon as possible after storm events depending upon worker safety.
- ● Update the SWPPP as needed, to manage pollutants or reflect changes in site conditions.
- ● Include description of post construction BMPs at the construction site, including parties responsible for long-term maintenance.

NOTE: *Please refer to the Construction Activities General Permit for detailed information. You may contact the SWRCB, your local RWQCB, or visit the SWRCB website at www.swrcb.ca.gov/stormwtr/ to obtain a State Construction Activities Stormwater General Permit packet.*

How long is this Construction Activities General Permit in effect?

The Permit coverage stays in effect untilyou submit a Notice of Termination (NOT) to the SWRCB. For the purpose of submitting a NOT, all soil disturbing activities have to be completed and one of the three following criteria has to be met:

1. Change of ownership;
2. A uniform vegetative cover with 70 percent coverage has been established; or,
3. Equivalent stabilization measures such as the use of reinforced channel liners, soil cement, fiber matrices, geotextiles, etc., have been employed.



Landscaping and garden maintenance activities can be major contributors to water pollution. Soils, yard wastes, over-watering and garden chemicals become part of the urban runoff mix that winds its way through streets, gutters and storm drains before entering lakes, rivers, streams, etc. Urban runoff pollution contaminates water and harms aquatic life!

In Riverside County, report illegal discharges into the storm drain, call
1-800-506-2555
"Only Rain Down the Storm Drain"

Important Links:

Riverside County Household Hazardous Waste Collection Information
1-800-304-2226 or www.rivcowm.org

Riverside County Backyard Composting Program
1-800-366-SAVE

Integrated Pest Management (IPM) Solutions
www.ipm.ucdavis.edu

California Master Gardener Programs
www.mastergardeners.org
www.camastergardeners.ucdavis.edu

California Native Plant Society
www.cnps.org

The Riverside County "Only Rain Down the Storm Drain" Pollution Prevention Program gratefully acknowledges Orange County's Storm Water Program for their contribution to this brochure.

...Only Rain Down ...the Storm Drain

What you should know for... Landscape and Gardening

Best Management tips for:

- Professionals
- Novices
- Landscapers
- Gardeners
- Cultivators



Tips for Landscape & Gardening

This brochure will help you to get the most of your lawn and gardening efforts and keep our waterways clean. Clean waterways provide recreation, establish thriving fish habitats, secure safe sanctuaries for wildlife, and add beauty to our communities. NEVER allow gardening products or waste water to enter the street, gutter or storm drain.

General Landscaping Tips

- Protect stockpiles and materials from wind and rain by storing them under tarps or secured plastic sheeting.
- Prevent erosion of slopes by planting fast-growing, dense ground covering plants. These will shield and bind the soil.



- Plant native vegetation to reduce the amount of water, fertilizers and pesticides applied to the landscape.
- Never apply pesticides or fertilizers when rain is predicted within the next 48 hours.

Garden & Lawn Maintenance

- Do not overwater. Use irrigation practices such as drip irrigation, soaker hoses or micro-spray systems. Periodically inspect and fix leaks and misdirected sprinklers.
- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead, dispose of green waste by composting, hauling it to a permitted landfill, or recycling it through your city's program.



- Consider recycling your green waste and adding "nature's own fertilizer" to your lawn or garden.
- Read labels and use only as directed. Do not over-apply pesticides or fertilizers. Apply to spots as needed, rather than blanketing an entire area.
- Store pesticides, fertilizers and other chemicals in a dry covered area to prevent exposure that may result in the deterioration of containers and packaging.
- Rinse empty pesticide containers and re-use rinse water as you would use the product. Do not dump rinse water down storm drains or sewers. Dispose of empty containers in the trash.
- When available, use non-toxic alternatives to traditional pesticides, and use pesticides specifically designed to control the pest you are targeting.
- Try natural long-term common sense solutions first. Integrated Pest Management (IPM) can provide landscaping guidance and solutions, such as:
  - **Physical Controls** - Try hand picking, barriers, traps or caulking holes to control weeds and pests.
  - **Biological Controls** - Use predatory insects to control harmful pests.
  - **Chemical Controls** - Check out www.ipm.ucdavis.edu before using chemicals. Remember, all chemicals should be used cautiously and in moderation.
- If fertilizer is spilled, sweep up the spill before irrigating. If the spill is liquid, apply an absorbent material such as cat litter, and then sweep it up and dispose of it in the trash.
- Take unwanted pesticides to a Household Waste Collection Center to be recycled.
- *Dumping toxics into the street, gutter or storm drain is illegal!*

www.bewaterwise.com Great water conservation tips and drought tolerant garden designs.

www.ourwaterourworld.com Learn how to safely manage home and garden pests.

Additional information can also be found on the back of this brochure.



Living on the Edge

Your community preserves habitat for important native plants and animals. By habitat, we mean homes; food, water, and places with space to live. The habitat is managed as part of a ***biological conservation easement*****,** a legal agreement that permanently limits its use.

Many conservation easements include a waterway or wetland because plants and animals need clean, fresh water, the most limited resource in our dry Southern California climate. A waterway (also called watercourse, arroyo, wash) conveys a flowing creek, stream, or river, which provides drinking water for local and migrating wildlife.

Not all of our waterways have visible flowing water year-round. Some creeks and streams continue to flow underground, while others flow for a short time after a storm (ephemeral). The small, and often dry washes are important to wildlife because they provide habitat and their periodic flows drain into larger waterways. It's essential that people do not degrade the quality of any water that reaches local waterways.

Water supports an abundance of vegetation and a variety of life, or *biodiversity.* Streamside vegetation, along dry or flowing waterways, is referred to as *riparian.* **Native** riparian plants provide **native** animals with suitable food, shelter, nesting sites and escape-cover from predators.

Help Your Wild Next-Door Neighbors

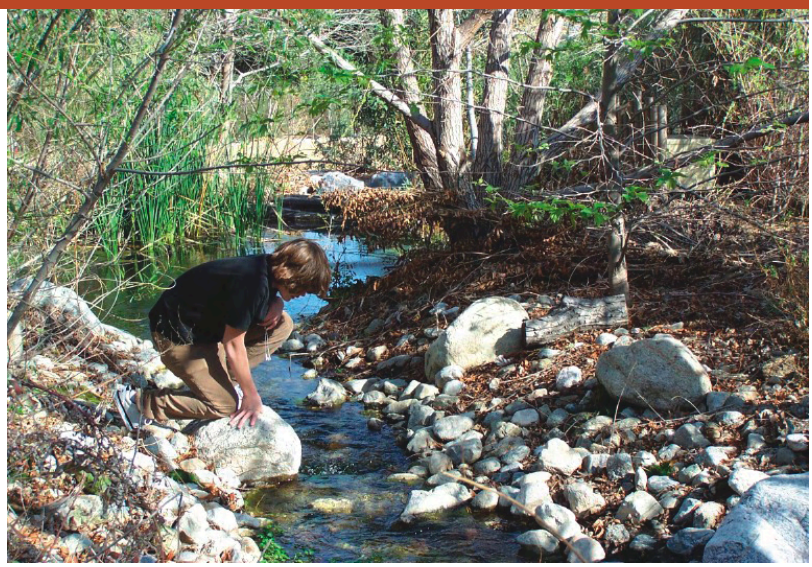
The purpose of this publication is to help homeowners become *habitat-friendly* neighbors for nearby habitat lands. The *Resources Directory*, inserted inside this booklet, provides helpful websites and contact information for agencies, organizations, gardens, and native plant nurseries.



Gerald & Buff Corsi, California Academy of Sciences

Unfortunately, our modern-day lifestyles have negative impacts on the environment around us. Human activity in, or near waterways can damage the capacity of the habitat to support some kinds of plant and animal life, especially species that do not adapt to urban/suburban conditions. Here are some ways to prevent and reduce negative impacts and help restore habitat to healthy conditions.

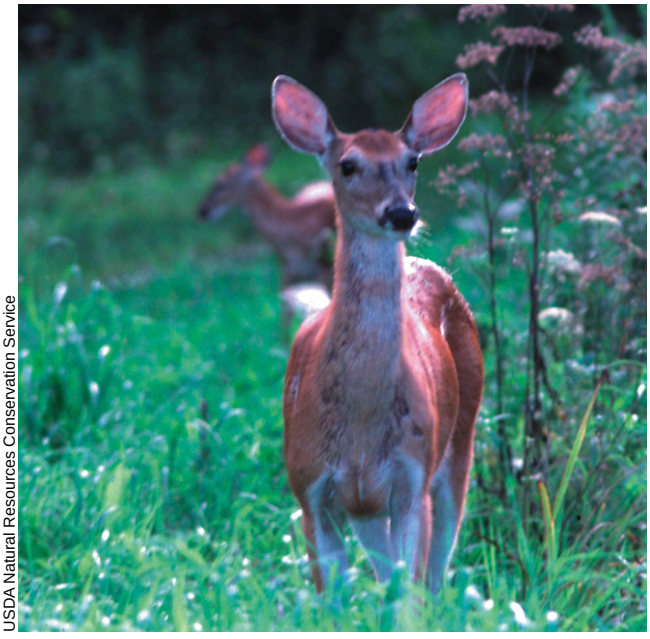
Reduce Impacts on Native Wildlife



Diana Ruiz

Prevent light, noise, and activity in, and adjacent to wetlands.

- If you wish to observe wildlife, please watch from afar, especially during the breeding and nesting season, from March to September. Most wild animals are naturally fearful of human contact. Human activity near a nest or den may frighten adult animals away from young and jeopardize their survival.
- When visiting natural areas, disturb as little as possible. Avoid walking or riding in a stream course or on channel banks. Heavy foot traffic, horses, and off-road vehicles may cause channel banks to collapse, accelerating erosion and increasing water-born sediment and turbidity.
- Help control entry into habitat areas. Close unessential roadways to prevent access for illegal dumping, trespass, and off-road vehicle use.
- Leave nothing behind.
- Focus necessary lighting downward and inward toward your home, yard, and buildings.
- To report poaching or polluting call CalTIP, Californians Turn In Poachers and Polluters, a confidential secret witness program. The toll free telephone number operates 24 hours a day, 7 days a week. (See the *Resources Directory* insert for contact information.)



USDA Natural Resources Conservation Service

Do not allow pets to roam in habitat land where they will disturb and hunt native wildlife. Keep pets on a leash and droppings out of waterways. Cats and dogs stress or kill wildlife and prevent natural ecosystems from supporting their own predators, such as hawks, coyotes, foxes, and bobcats. Conversely, domesticated animals face hazards in wild areas. Pets may be attacked by predators, such as coyotes and rattlesnakes, or may contract disease, fleas, and ticks.

Do not release unwanted animals into the wild. Abandoned cats, dogs, birds, reptiles and fish can have significant impacts on populations of native species, either through disease, predation or competition for food and space.



Lee Karney/ U.S. Fish and Wildlife Service

Brown-headed Cowbird

- Exotic invaders crowd out native species both on land and in water. Do not place fish, frogs, crayfish, turtles, or aquatic plants into creeks, streams or lakes. Some non-native species are not only able to survive, but also reproduce explosively due to a lack of natural predators. For example, the brown-headed cowbird is overwhelming riparian habitats. The cowbird lays its eggs in another bird's nest to the detriment of the host's young.



Mark A. Chappell

The endangered Least Bell's Vireo is threatened by the Brown-headed Cowbird.

- Pets are usually unable to survive in wildlands. They starve to death or are eaten. If you cannot find a home for a pet, contact animal control, your local animal shelter, or the Humane Society.

Respect and protect wild animals by keeping them wild. In some instances, being a good neighbor means protecting your living area by excluding certain kinds of wildlife, mainly mammals. The *human habitat* includes home sites, buildings, yards, gardens, and regularly used outdoor areas. Install fencing around the human habitat portion of your property and secure enclosures to protect children, pets, and farm animals.

- Do not take small animals, such as tortoises, tadpoles, frogs, snakes, birds, lizards or eggs from the wild. Never attempt to "adopt" or domesticate a wild animal.

- Discourage dangerous predators from penetrating human habitat areas. Install fencing that will exclude predators. Place sensors that trigger sprinklers and lights to deter predators and mammals from entering areas of human activity.

- Prevent mammals from living in and near your home by closing entries, filling holes, and removing brush, junk, and woodpiles near buildings.

- Don't feed human food to wildlife. Do not leave pet food outside. Prevent garbage from becoming a food source for wild mammals by sealing trash can lids. If you compost, use closed-containers or turn piles regularly. Compost plant material only; meat scraps should not be mixed in a compost pile.



R. H. Barrett/ U. S. Fish and Wildlife Service

For more information, contact the California Department of Fish and Game.
(See the *Resources Directory* insert for contact information.)

Reduce Impacts on Native Plants

Remove invasive, non-native plants from home landscaping and adjacent habitat lands, especially those that quickly spread through waterways, displacing important native species.


Diana Ruiz

Invasive Giant Reed (*Arrundo donax)* is being removed from Temescal Creek.

DO NOT PLANT

Giant reed	*Arundo donax*
Salt Cedar	*Tamarix chinensis*
Tree of Heaven	*Ailanthus altissima*
Red apple, heartleaf iceplant	*Aptenia cordifolia*
Fountain grass (yellow)	*Pennisetum setaceum*
Castor bean	*Ricinus communis*
Periwinkle	*Vinca major*
Peruvian (Calif.) pepper tree	*Schinus molle*
Brazilian pepper tree	*Schinus terebinthifolius*
Mexican fan palm	*Washingtonia robusta*
Sweet fennel	*Foeniculum vulgare*
Pampas grass/Jubata grass	*Cortaderia jubata/selloana*
Common iceplant	*Mesembryanthemum crystallinum*
Myoporum species	

Contact your local Resource Conservation District for help identifying invasive species and for removal of exotic weeds from waterways. Visit the California Invasive Plant Council web site for suggested plants to replace invasives. (See the *Resources Directory* insert for contact information.)

Protect Water Quality


Diana Ruiz

Make sure that the water that flows off your property is clean.

- Prevent trash, debris, and waste of any kind from washing off homesites and streets into gutters, storm drains, and dry washes. These drainage-ways empty into streams that flow to the Santa Ana River, and ultimately, the ocean.
- Evaluate the flow of runoff over your property. Place manure, barnyard bedding, and debris in areas where water does not pool or flow, or reuse the waste as fertilizer or mulch. Check with your local municipality for ordinances concerning the disposal of manure and bedding.
- Use care when applying fertilizers, pesticides, and herbicides on your property. Read labels “before you buy and before you apply” for directions, application rates, and disposal. Apply the correct amount at the proper time, for example, not during plant dormancy.



Praying mantis



Ladybird beetle



Lacewing

Photos by Greg Balmer

- Reduce or eliminate the use of pesticides by using “beneficial insects” (ladybugs, praying mantids, lacewings, etc.) If you must use a pesticide, use one with a *least-toxic* rating, such as insecticidal soaps, horticultural oils, pyrethrin-based insecticides, and insect growth regulators.
- Control erosion to prevent sediment from entering runoff.
- If you have a septic system, inspect and maintain it. Poorly placed and neglected septic systems contaminate groundwater and streams.

Pollutants that flow from residential and urban areas contaminate surface water and the water that percolates into underground water basins (aquifers). Much of our local water supply is pumped from underground aquifers, so keeping runoff clean is essential.

To report any non-emergency crime, such as dumping, please call your City Police or County Sheriff Departments. To report illegal grading or dumping in waterways, contact your City or County Code Enforcement Department. (See the *Resources Directory* insert for contact numbers.)

Dispose of waste in its proper place.

- Read product labels, and dispose of household hazardous wastes (oil based paints, pesticides, antifreeze, motor oil, batteries, flourescent bulbs, etc.) in prescribed ways and at designated disposal sites or community collection events, not on the ground or in a storm drain inlet. Whenever possible, reduce the use of hazardous materials in and around your home. Call the *Only Rain Down the Storm Drain* program for disposal dates and locations. (See the *Resources Directory* insert for contact numbers.) You can also recycle automotive fluids, tires, and batteries at car repair businesses.
- Dispose of trash at sanitary landfills.
- Compost yard and other organic wastes.



Diana Ruiz

Better yet:

Reduce,
Reuse,
Recycle.

Provide Space for Habitat, Fire, and Flood Protection



Robert Calvo

Siting Homes Near Waterways
If you are building next to a waterway, leave a buffer between the waterway and your *human habitat* area of graded pads, structures, and ornamental landscaping. *Wildlife habitat* land includes areas beyond buildings, yards, and defensible space (fire safety zones), generally to be left undisturbed for wildlife. A buffer between the human habitat and a waterway provides space for habitat, flood waters, and for wildlife escape during high water.

The buffer or "setback" distance will vary according to site conditions, however a minimum 100-foot setback from the **top edge** of a waterway, not from the water itself, is recommended. This allows space for creek/stream meander and high water flows. The banks of creeks and streams "meander", which means they are constantly "wandering" or relocating. Meander naturally occurs when flows cause erosion of channel banks and deposition of sediment.

As land is converted to urban uses, the volume of flow in waterways increases. Impervious surfaces from streets, roofs, and parking lots increase the amount of runoff, erosion and pollutants that degrade water quality.



Frank Heyming

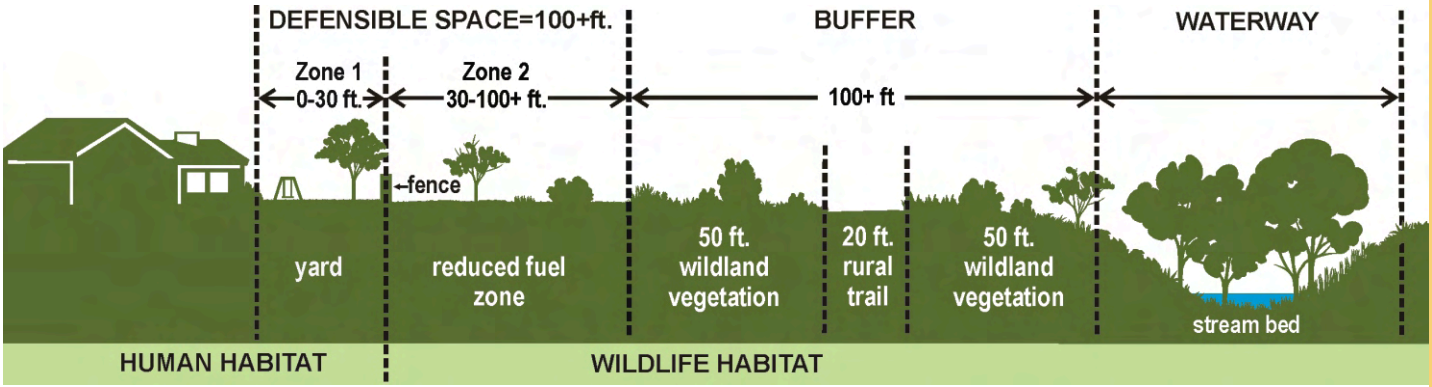
A house pad fills an important tributary to an waterway.

Many people are not aware of the vulnerability of natural ecosystems, nor are they aware that it is illegal to grade or alter a waterway without an assessment and permits from resource agencies and municipalities. If you propose an activity that will impact a stream, river, or lake, the California Department of Fish and Game (DFG) requires completion of a Streambed Alteration Agreement. Depending on the activity you are proposing, you may need to obtain a permit, agreement, or other authorization from one or more government agencies. Notify DFG, U.S. Army Corps of Engineers, and the Santa Ana Regional Water Quality Control Board during early planning, prior to beginning a project that will:

- use material from a streambed;
- divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake;
- result in the disposal or deposition of debris, waste, or other natural material where it can pass into any river, stream, or lake.

A Streambed Alteration Agreement is also required for streams that flow intermittently, such as dry washes and waterways with subsurface flow.

It is essential that landowners do not confine, or encroach on waterways. Keep buildings, septic systems, horses, livestock, fencing, agricultural and ornamental plantings out of waterways and away from channel banks.



When building homes In fire-prone areas, avoid ridge tops and canyons. Set buildings back from the edge of steep slopes. Create a minimum distance of 100-feet of *defensible space,* a managed area around a home, where the amount of fuel (dead plants, dry leaves, wood) has been reduced. Consult with your local fire department or the California Department of Forestry and Fire Protection for fire safety and weed abatement information.
(Please see *Resources Directory* insert).

Habitat-friendly Yards


Len Nunney

Landscape with Locals. Not just any California native plant is suitable for landscapes near habitat lands. Local native plants are the safest because they have unique characteristics that have helped them survive in their specific environments. Gardening with local flora helps maintain the *genetic integrity* of local plants and ecosystems. It helps maintain regional variation in vegetation and wildlife.

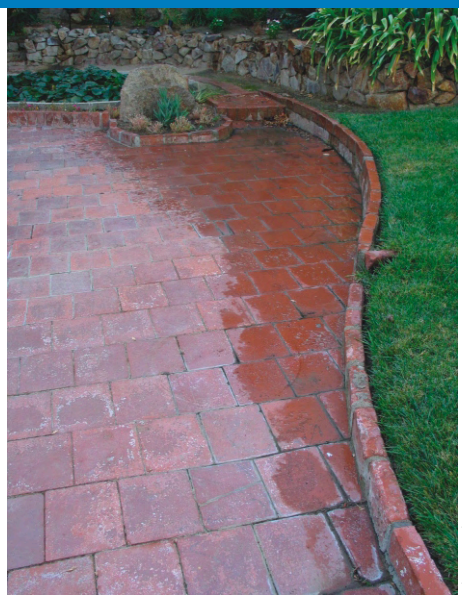
Why is regional variation important? If plants from other areas crossbreed with local natives, scientists fear that local populations would lose some of the unique characteristics that are important for success in this region. Their genetic material would no longer be unique and regionally identifiable. Plant interbreeding could reduce biological diversity, *biodiversity*, in the gene pool. There are important interactions between native plants, microorganisms, and the animals that use them, some of which are critical to the reproduction and survival of native plants and animals.

Create habitat in your yard for urban-adapted wildlife. Even if you live in the heart of a city, consider gardening for urban-adapted wildlife by providing a reliable water source and **local** native plants that provide food, shelter, and nesting sites. Each small patch of yard provides a stepping-stone of habitat from wildlands across the city. A patchwork of *habitat-yards* creates an urban ecosystem that more closely mimics our predevelopment, native landscape. When linked together, those patches cumulatively support biodiversity. To host a variety of native birds and butterflies in your yard, select plants that flower and fruit at different times of the year. Prune trees and shrubs in fall and early winter, rather than spring, to avoid destroying bird nests.

Benefits of landscaping with local native plants:

- **Most native plants are drought tolerant, so they require less water.**
- **Natives rarely require fertilizers.**
- **Patches of habitat support urban-adapted wildlife, such as birds, bats and insects that help pollinate plants.**
- **Natives rarely require pesticides. Native plants provide their own natural pest control by attracting beneficial insects that prey on troublesome bugs.**
- **Local natives help preserve *genetic diversity* and the integrity of local ecosystems.**

Water-wise Landscapes Conserve Water



Diana Ruiz

Reduce water-use by replacing unnecessary lawn areas with native or drought-tolerant plants and with hardscape (hard surfaces), such as walkways and patios of concrete, brick, stone, decomposed granite, and permeable paving. For places where you do need a lawn, such as play areas, plant a low water-use turf variety.

When selecting a plant, find out:

- Is it water-thirsty or drought-tolerant?
- When is its growing season; when will it need water?

Most* local native plants are dormant or slow-growing during the hot, dry summers; their growth occurs during our rainy season. Once established, many survive with rainfall alone. This is the opposite for non-native, ornamental landscapes that grow slowly, or not at all during winter, but require irrigation throughout the summer.

- Group plants with similar watering needs together, and install water-saving irrigation systems (drip, micro-sprayers) to apply the correct amount for each *hydro-zone* or plant grouping. Trees require deep irrigation and may need separate irrigation lines.
- Readjust your irrigation schedule for season and weather conditions. Turn off automatic systems when it's raining. Don't run sprinklers when the wind is blowing. Water deeply and only when needed. Water plants in the early morning or evening. Adjust irrigation systems to water soil, not concrete and pavement.
- Apply mulch (bark, compost, sawdust, gravel) to reduce evaporation from the soil surface and to control weeds.

For information about conserving water in landscapes and using native and drought tolerant plants, refer to plant databases, such as the one at bewaterwise.com. The website will also help you create a customized watering schedule for your yard. (See the *Resources Directory* insert for booklist and websites.)

*Not all native plants are dormant during summer: local riparian plants are the exception. They need water year round, as they are suited for waterways. Streamside vegetation, along dry or flowing waterways, is referred to as riparian.

Fire-wise Landscaping

Create a minimum distance of 100 ft. of *defensible space*, a landscape that deprives fire of fuel. Use fire-resistant plants and remove plants that are highly volatile.

Zone 1: Lean, Clean and Green

Zone 1 is from 0-30 ft. out from buildings. (See diagram on prior page.)
Grow plants that are small or succulent, such as irrigated lawns or ground covers and low growing, high-moisture shrubs. If you use native plants, use those that can be trimmed back during the dry season or that stay small with little trimming. Native plants that tolerate summer watering (see native plant lists) should be kept well hydrated.*

- Keep plants well hydrated to help them resist fire. Well-trimmed and watered plants are less likely to ignite than desiccated plants that have a buildup of dry stems and leaves.
- Fire needs fuel to burn, so remove any unnecessary plant materials. Prune dead wood and clean the landscape of dead plants, dry leaves, dry brush, firewood, and combustibles.
- Strategically place hard surfaces in your landscape, such as concrete, brick, or stone patios, driveways, pools, walls, and non-flammable decks, to interrupt the spread of fire to buildings.

Zone 2: Reduced Fuel

Create the reduced fuel zone beginning 30 ft. from buildings and extending 100 ft. or more, depending on steepness of slope and type/density of vegetation.

- Selectively remove large shrubby plants and dense groupings. Thin overcrowded plants. Mow grasses and weedy vegetation while they are green.
- Carefully remove excess plants without disturbing the soil; mow instead of disc, to prevent erosion and invasion of non-native plants.
- In chaparral plant communities, after thinning, reduce old, woody growth by cutting plants to their bases every few years, during the summer dormancy. Young plant tissues have higher moisture content and are less flammable. The heavy pruning eliminates mature, highly flammable vegetation but maintains root systems to protect the soil from erosion.
- Low branches and plants growing under trees create “ladders” for fire to climb. Eliminate ladder fuels, plants that serve as a link between grass and treetops. Prune the lower branches from the lower 1/3 of trees and shrubs. For trees or shrubs taller than 18 feet, prune the lower branches 6 feet above the ground. Remove dead leaves, twigs, and branches.
- In general, remove shrubs that are growing below trees, unless there is a space between the top of the shrub to the lowest branch of the tree that is three times the height of the shrub.

Remove plants that ignite easily and burn hot, such as those with volatile oils (sages) and those that accumulate fine woody branches or many small, dry leaves (chamise). In Zone 1, remove highly volatile plants (partial list below). In Zone 2, remove or widely space volatile plant types, including:

Chamise, *Adenostoma fasciculata*
Brittlebrush, *Encelia farinosa*
California buckwheat, *Eriogonum fasciculatum*
White sage, *Salvia apiana*
Some Eucalyptus and Acacia

Black sage, *Salvia mellifera*
Woolly blue curls, *Trichostema lanatum*
Mountain blue curls, *Trichostema parishii*
Red Shank, *Adenostoma sparsifolium*
All Pine, Cypress, Juniper, and Cedar species.

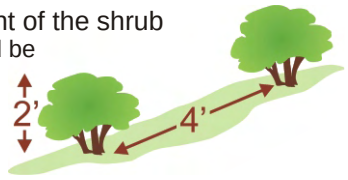
*For best results with native plants, water on overcast days during summer and fall.

Create Space Between Plants

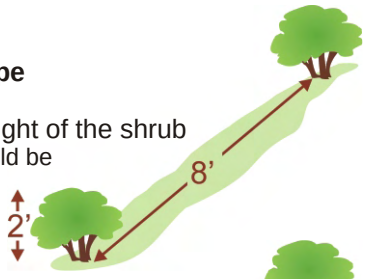
Shrubs

From edge of one shrub to the edge of the next.

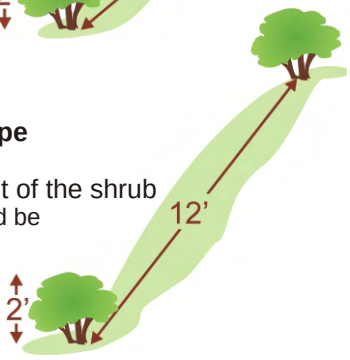
Flat to mild slope
(0% to 20% slope)
Two times (2x) the height of the shrub
(Two shrubs 2' high should be spaced 4' apart)



Mild to moderate slope
(20% to 40% slope)
Four times (4x) the height of the shrub
(Two shrubs 2' high should be spaced 8' apart)



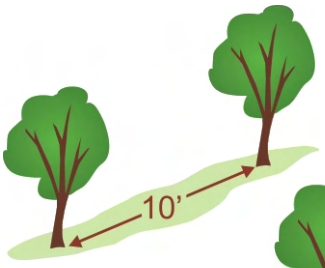
Moderate to steep slope
(greater than 40% slope)
Six times (6x) the height of the shrub
(Two shrubs 2' high should be spaced 12' apart)



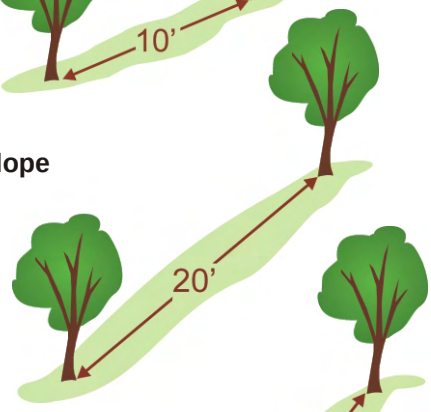
Trees

From edge of one tree canopy to the edge of the next.

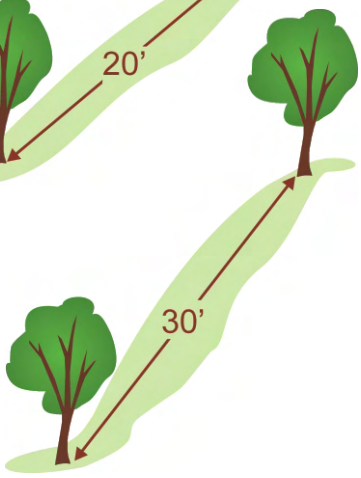
Flat to mild slope
(0% to 20% slope)



Mild to moderate slope
(20% to 40% slope)



Moderate to steep slope
(greater than 40% slope)



Horizontal clearance information from the California Department of Forestry and Fire Protection.

Prevent erosion and stabilize eroding areas. If you have exposed soil surfaces, cover with mulch, and landscape as soon as possible. (Plants break the impact of falling rain, and their roots hold soil in place.) Eroding soil becomes sediment in runoff water, which pollutes waterways. Disturbed soil also encourages the growth of non-native weed species.

Retain thinned, deep-rooted native plants to anchor the soil and maintain slope stability. Generally, tall plants have deep, broad root systems. A goal of fire-wise landscaping is to maximize rooting depth while minimizing fuel volume.



Diana Ruiz

For site-specific advice, contact your local Resource Conservation District (RCD) or the USDA Natural Resources Conservation Service (NRCS). For recommendations of native grasses for erosion control, contact the California Native Grasslands Society. (See the *Resources Directory* insert for contact information.)

Native Plants for Defensible Space Landscaping in the Inland Empire

If you prefer to create a landscape of native, low water-use plants, use these lists to design a yard that is fire-wise. Maintenance is essential; dead and dry plant material must be removed during dry, summer dormancy. Some native plants cannot tolerate irrigation during their summer dormancy, so may die if watered too frequently. Some need only infrequent, deep watering to remain hydrated during the dry summer and fall. The low-growing, low-fuel volume plants are suitable for Zone 1 (0-30 ft.) and beyond. Larger shrubs and trees, for Zone 2 (30-100+ ft.), must be widely spaced (see diagram on previous page).

Shrubs for Zone 2

Shrubs that need or tolerate water during summer.

Carpenteria, *Carpenteria californica*
Western redbud, *Cercis occidentalis*
Toyon, *Heteromeles arbutifolia*
Nevin's barberry, *Mahonia nevinii*
Coffeeberry, *Rhamnus californica*
Golden current, *Ribes aureum.*
California wild rose, *Rosa californica*
Western bridalwreath, *Spiraea douglasii*
Squawbush, *Rhus trilobata*


UDSA-NRCS PLANTS Database
Coffeeberry

Shrubs that do not usually tolerate water during summer.

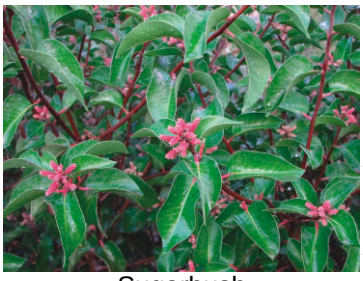
Low shrubs

Bladder pod, *Isomeris arborea*
Bush monkeyflower, *Mimulus aurantiacus*
Chaparral honeysuckle, *Lonicera subspicata*
Hollyleaf redberry, *Rhamnus illicifolia*
Redberry, *Rhamnus crocea*
Yellow bush-penstemon, *Keckiella antirrhinoides*


Paul Aigner
Yellow bush-penstemon

Tall, deep-rooted shrubs that stay green during summer.

Bigberry manzanita, *Arctostaphylos glauca*
Thick-leaved lilac, *Ceanothus crassifolius*
Buck brush, *Ceanothus cuneatus*
Hairy California lilac, *Ceanothus oliganthus*
Mountain mahogany, *Cercocarpus betuloides*
Laurel sumac, *Malosma laurina*
Scrub oak, *Quercus berberidifolia*
Sugarbush, *Rhus ovata*
Lemonade berry, *Rhus integrifolia*
California Flannel bush, *Fremontodendron californicum*


Arlee M.Montalvo
Sugarbush

Trees for Zone 2

Trees that tolerate occasional water during summer.

Catalina cherry, *Prunus illicifolia* ssp. *Lyonii*
Coast live oak, *Quercus agrifolia*
Valley oak, *Quercus lobata*
Engelman oak, *Quercus engelmannii*

Trees that need water during summer.

Big leaf maple, *Acer macrophyllum*
White alder, *Alnus rombifolia*
So. California walnut, *Juglans californica*
California sycamore, *Platanus racemosa*
California black oak, *Quercus kelloggii*
Canyon live oak, *Quercus chrysolepis*
Willows: *Salix laevigata, S. gooddingii*
California bay laurel, *Umbellularia californica*


J. S. Peterson @ UDSA-NRCS
Big leaf maple

Low-growing, (low fuel volume) Plants for Zones 1 and 2

Perennial herbs that tolerate or need water during summer

Yarrow, *Achillea millifolium*
Columbine, *Aquilegia formosa*
Douglas iris, *Iris douglasiana*
Deer grass, *Muhlenbergia rigens*
Calif. blue-eyed grass, *Sisyrinchium bellum*
Meadow rue, *Thalictrum fendleri* var. *polycarpum*
Yerba mansa, *Anemopsis californica*
Coral bells, *Heuchera* ssp.
Common monkey flower, *Mimulus guttatus*
Scarlet bugler, *Penstemon centranthifolius*
California goldenrod, *Solidago californica*
Hedge nettle, *Stachys bullata*
Slender sedge, *Carex praegracilis*
Narrow-leaved milkweed, *Asclepias fascicularis*


Arlee M.Montalvo
Narrow-leaved milkweed

Succulents, Ground Covers, and Low Shrubs

Keep hydrated; if needed, water monthly during summer.

San Diego sedge, *Carex spissa*
Wild lilac, *Ceanothus griseus 'horizontalis'*
California fuchsia, *Epilobium canum =Zauschneria*
Golden yarrow, *Eriophyllum confertiflorum*
Lance-leaved live-forever, *Dudleya lanceolata*
Chalk dudleya, *Dudleya pulverulenta*
Parry's nolina, *Nolina parryi*
Creeping sage, *Salvia sonomensis*
Creeping snowberry, *Symphoricarpos mollis*
Chaparral yucca, *Yucca whipplei = Hesperoyucca whipplei*
Valley cholla, *Opuntia parryi*
Coastal prickly pear, *Opuntia littoralis*


Arlee M.Montalvo
Chaparral yucca

Annuals or summer-dormant perennials

No need for water during summer. There is little, if any, plant material above ground to burn.

California poppy, *Eschscholzia californica*
Larkspurs, delphinium, *Delphinium parryi, D.cardinale*
Wild Canterbury-bell, *Phacelia minor*
California figwort, *Scrophularia californica*
Baby blue eyes, *Nemophila menziesii*
Royal penstemon, *Penstemon spectabilis*
Lupine, *Lupinus* species *(L. bicolor, L. succulentus, L. truncatus, L. sparsiflorus*)


Arlee M.Montalvo
Baby blue eyes

Habitat Land Stewards

If you live near conservation easement land or a waterway, there are ways that you can help. Be observant of activities that might be harmful to your nearby habitat lands, or form a *habitat-watch* group in your neighborhood. Like a neighborhood-watch, property owners help look out for neighborhood habitat and waterways, report illegal activity, and help educate neighbors about human impacts. For help forming a *habitat-watch* group, contact your local Resource Conservation District or the Riverside Land Conservancy.

RCRCD
RIVERSIDE-CORONA RESOURCE CONSERVATION DISTRICT

This publication was developed by the Riverside-Corona Resource Conservation District. www.RCRCD.com
1-07

All programs and services are provided without regard for race, religion, gender, national origin, and handicap.
Printed on recycled paper



KEEP RIVERSIDE CLEAN & BEAUTIFUL

teaching, serving and conserving

WARD 2 BEAUTIFICATION PROJECT

Volunteer for Litter Cleanups and Graffiti Abatement



SATURDAY • FEB 6 • 2010

From 8:00 a.m. to 11:00 a.m.

LINCOLN PARK

4261 Park Ave. Riverside, CA 92507

B.Y.O.W.B. - Bring Your Own Water Bottle

… KRCB will provide refills, & all project tools

No sandals or flip-flops; must wear long pants

Receive community service hours

MUST RSVP! SIGN UP NOW TO VOLUNTEER:

Keep Riverside Clean & Beautiful • 3985 University Ave. • Riverside, CA 92501 • fax 951.683.2670

Business/Organization: _____

Name: _____

Address: _____

City: _____ **Zip:** _____

Phone: _____ **Fax:** _____

Email: _____

# of Total Volunteers: _____ **# of Volunteers Under 18:** _____

For project information contact Tijana: 951.683.7100 x212, or tquilici@riverside-chamber.com

For Connections, Information & Access to Business Opportunities

Contact the Greater Riverside Chambers of Commerce at: **951.683.7100**

Keep Riverside Clean & Beautiful is a community program sponsored by the City of Riverside Public Works Department and the Greater Riverside Chambers of Commerce

Our Mission… To instill a sense of community pride by creating partnerships that work toward the beautification of the City

Helpful telephone numbers and links:

Riverside County Water Agencies

City of Banning	(951) 922-3130
City of Beaumont/Cherry Valley	(951) 845-9581
City of Blythe	(760) 922-6161
City of Coachella	(760) 398-3502
City of Corona	(951) 736-2263
City of Hemet	(951) 765-3710
City of Norco	(951) 270 5607
City of Riverside Public Works	(951) 351-6140
City of San Jacinto	(951) 654-4041
Coachella Valley Water District	(760) 398-2651
Desert Water Agency (Palm Springs)	(760) 323-4971
Eastern Municipal Water District	(951) 928-3777
Elsinore Valley Municipal Water District	(951) 674 3146
Elsinore Water District	(951) 674-2168
Farm Mutual Water Company	(951) 244-4198
Idyllwild Water District	(951) 659-2143
Indio Water Authority	(760) 391-4129
Jurupa Community Services District	(951) 685-7434
Lee Lake Water	(951) 658-3241
Mission Springs Water	(760) 329-6448
Rancho California Water District	(951) 296-6900
Ripley, CSA #62	(760) 922-4951
Riverside Co. Service Area #51	(760) 227-3203
Rubidoux Community Services District	(951) 684-7580
Valley Sanitary District	(760) 347-2356
Western Municipal Water District	(951) 789-5000
Yucaipa Valley Water District	(909) 797-5117

REPORT ILLEGAL STORM DRAIN DISPOSAL
1-800-506-2555 or e-mail us at
fcnpdes@rcflood.org

- Riverside County Flood Control and Water Conservation District
  www.rcflood.org

Online resources include:

- California Storm Water Quality Association
  www.casqa.org
- State Water Resources Control Board
  www.waterboards.ca.gov
- Power Washers of North America
  www.thepwna.org

Stormwater Pollution

What you should know for...

Outdoor Cleaning Activities and Professional Mobile Service Providers



Storm drain pollution prevention information for:

- Car Washing / Mobile Detailers
- Window and Carpet Cleaners
- Power Washers
- Waterproofers / Street Sweepers
- Equipment cleaners or degreasers and all mobile service providers

Do you know where street flows actually go?

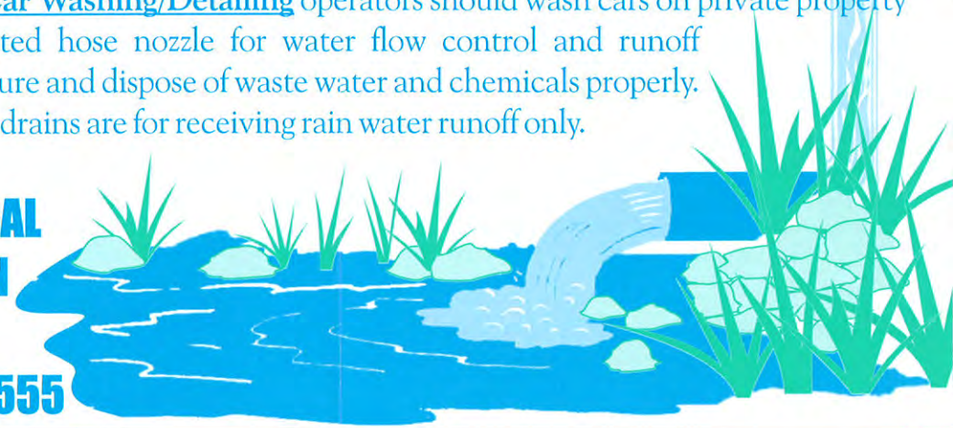
Storm drains are NOT connected to sanitary sewer systems and treatment plants!



The primary purpose of storm drains is to carry rain water away from developed areas to prevent flooding. Pollutants discharged to storm drains are transported directly into rivers, lakes and streams. Soaps, degreasers, automotive fluids, litter and a host of materials are washed off buildings, sidewalks, plazas and parking areas. Vehicles and equipment must be properly managed to prevent the pollution of local waterways.

Unintentional spills by mobile service operators can flow into storm drains and pollute our waterways. **Avoid mishaps.** *Always* have a **Spill Response Kit** on hand to clean up unintentional spills. Only emergency **Mechanical** repairs should be done in City streets, using drip pans for spills. **Plumbing** should be done on private property. Always store chemicals in a leak-proof container and keep covered when not in use. **Window/Power Washing** waste water shouldn't be released into the streets, but should be disposed of in a sanitary sewer, landscaped area or in the soil. Soiled **Carpet Cleaning** wash water should be filtered before being discharged into the sanitary sewer. Dispose of all filter debris properly. **Car Washing/Detailing** operators should wash cars on private property and use a regulated hose nozzle for water flow control and runoff prevention. Capture and dispose of waste water and chemicals properly. Remember, storm drains are for receiving rain water runoff only.

REPORT ILLEGAL STORM DRAIN DISPOSAL 1-800-506-2555



Help Protect Our Waterways!

Use these guidelines for Outdoor Cleaning Activities and Wash Water Disposal

Did you know that disposing of pollutants into the street, gutter, storm drain or body of water is *PROHIBITED* by law and can result in stiff penalties?

Best Management Practices

Waste wash water from Mechanics, Plumbers, Window/Power Washers, Carpet Cleaners, Car Washing and Mobile Detailing activities may contain significant quantities of motor oil, grease, chemicals, dirt, detergents, brake pad dust, litter and other materials.

Best Management Practices, or BMPs as they are known, are guides to prevent pollutants from entering the storm drains. ***Each of us*** can do our part to keep storm water clean by using the suggested BMPs below:

Simple solutions for both light and heavy duty jobs:

Do...consider dry cleaning methods first such as a mop, broom, rag or wire brush. Always keep a spill response kit on site.

Do...prepare the work area before power cleaning by using sand bags, rubber mats, vacuum booms, containment pads or temporary berms to keep wash water away from the gutters and storm drains.

Do...use vacuums or other machines to remove and collect loose debris or litter before applying water.

Do...obtain the property owner's permission to dispose of ***small amounts*** of power washing waste water on to landscaped, gravel or unpaved surfaces.

Do...check your local sanitary sewer agency's policies on wash water disposal regulations before disposing wash water to the sewer. (See list on reverse side)

Do...be aware that if discharging to landscape areas, soapy wash water may damage landscaping. Residual wash water may remain on paved surfaces to evaporate. Sweep up solid residuals and dispose of properly. Vacuum booms are another option for capturing and collecting wash water.

Do...check to see if local ordinances prevent certain activities.

Do not let...wash or waste water from sidewalk, plaza or building cleaning go into a street or storm drain.



Report illegal storm drain disposal,
Call Toll Free
1-800-506-2555

Using Cleaning Agents

Try using biodegradable/phosphate-free products. They are easier on the environment, but don't confuse them for being toxic free. Soapy water entering the storm drain system can impact the delicate aquatic environment.



When cleaning surfaces with a ***high-pressure washer*** or ***steam cleaner***, additional precautions should be taken to prevent the discharge of pollutants into the storm drain system. These two methods of surface cleaning can loosen additional material that can contaminate local waterways.

Think Water Conservation

Minimize water use by using high pressure, low volume nozzles. Be sure to check all hoses for leaks. Water is a precious resource, don't let it flow freely and be sure to shut it off in between uses.

Screening Wash Water

Conduct thorough dry cleanup before washing exterior surfaces, such as buildings and decks ***with loose paint***, sidewalks or plaza areas. Keep debris from entering the storm drain after cleaning by first passing the wash water through a "20 mesh" or finer screen to catch the solid materials, then dispose of the mesh in a refuse container. Do not let the remaining wash water enter a street, gutter or storm drain.

Drain Inlet Protection & Collection of Wash Water

- Prior to any washing, block all storm drains with an impervious barrier such as sandbags or berms, or seal the storm drain with plugs or other appropriate materials.
- Create a containment area with berms and traps or take advantage of a low spot to keep wash water contained.
- Wash vehicles and equipment on grassy or gravel areas so that the wash water can seep into the ground.
- Pump or vacuum up all wash water in the contained area.

Concrete/Coring/Saw Cutting and Drilling Projects

Protect any down-gradient inlet by using dry activity techniques whenever possible. If water is used, minimize the amount of water used during the coring/drilling or saw cutting process. Place a barrier of sandbags and/or absorbent berms to protect the storm drain inlet or watercourse. Use a shovel or wet vacuum to remove the residue from the pavement. Do not wash residue or particulate matter into a storm drain inlet or watercourse.

Helpful telephone numbers and links:

WATER AGENCY LIST in Riverside County

City of Banning	(951) 922-3130
City of Beaumont	(951) 769-8520
City of Blythe	(760) 922-6161
City of Coachella	(760) 398-3502
Coachella Valley Water District	(760) 398-2651
City of Corona	(951) 736-2259
Desert Center, CSA #51	(760) 227-3203
Eastern Municipal Water District	(951) 928-3777
Elsinore Valley MWD	(951) 674-3146
Farm Mutual Water Company	(951) 244-4198
City of Hemet	(951) 765-3712
Idyllwild Water District	(951) 659-2143
Jurupa Community Services District	(951) 360-8795
Lake Hemet MWD	(951) 658-3241
Lee Lake Water District	(951) 277-1414
March Air Force Base	(951) 656-7000
Mission Springs Water District	(760) 329-6448
City of Palm Springs	(760) 323-8253
Rancho Caballero	(951) 780-9272
Rancho California Water District	(951) 296-6900
Ripley, CSA #62	(760) 922-4951
City of Riverside	(951) 351-6170
Rubidoux Services District	(951) 684-7580
Silent Valley Club, Inc	(951) 849-4501
Valley Sanitary District	(760) 347-2356
Western Municipal Water District	(951) 789-5000
Yucaipa Valley Water District	(909) 797-5117

REPORT ILLEGAL STORM DRAIN DISPOSAL
1-800-506-2555 or online at
www.rcflood.org

Online resources include:

- Riverside County Flood Control and Water Conservation District
  www.rcflood.org
- California Storm Water Quality Association
  www.casqa.org
- State Water Resources Control Board
  www.swrcb.ca.gov/
- Power Washers of North America
  www.thepwna.org

StormWater Pollution

What you should know for...

OUTDOOR CLEANING ACTIVITIES AND PROFESSIONAL MOBILE SERVICE PROVIDERS



Storm drain pollution prevention information for:

- Car Washing / Mobile Detailers
- Window and Carpet Cleaners
- Power Washers
- Waterproofers / Street Sweepers
- Equipment cleaners or degreasers and all mobile service providers

Do you know where street flows actually go?

Storm Drains are NOT connected to sanitary sewer systems and treatment plants!



The primary purpose of storm drains is to carry rain water away from developed areas to prevent flooding. Pollutants discharged to storm drains are transported directly into rivers, lakes and streams. Soaps, degreasers, automotive fluids, litter and a host of materials are washed off buildings, sidewalks, plazas and parking areas. Vehicles and equipment must be properly managed to prevent the pollution of local waterways.

Unintentional spills by mobile service operators can flow into storm drains and pollute our waterways. **Avoid mishaps.** *Always* have a **Spill Response Kit** on hand to clean up unintentional spills**.** Only emergency **Mechanical** repairs should be done in City streets and use drip pans for spills. **Plumbing** should be done on private property. Always store chemicals in a leak-proof container and keep covered when not in use. **Window/Power Washing** waste water shouldn't be released into the streets, but should be disposed of in a sanitary sewer, landscaped area or in the soil. Soiled **Carpet Cleaning** wash water should be filtered before being discharged into the sanitary sewer. Dispose of all filter debris properly. **Car Washing/Detailing** operators should wash cars on private property and use a regulated hose nozzle for water flow control and runoff prevention. Capture and dispose of waste water and chemicals properly. Always prevent runoff water from entering storm drains.

REPORT ILLEGAL STORM DRAIN DISPOSAL 1-800-506-2555



Help Protect Our Waterways!

Use These Guidelines For Outdoor Cleaning Activities and Wash Water Disposal

Did you know that disposing of pollutants into the street, gutter, storm drain or nearest body of water is ***PROHIBITED*** by law and can bring about stiff penalties.

Best Management Practices

Waste wash water from Mechanics, Plumbers, Window/Power Washers, Carpet Cleaners, Car Washing and Mobile Detailing activities may contain significant quantities of motor oil, grease, chemicals, dirt, detergents, brake pad dust, litter and other materials.

Best Management Practices, or BMPs as they are known, are guides to prevent pollutants from entering the storm drains. *Each of us* can do our part to keep storm water clean by using the suggested BMPs below:

Simple solutions for both light and heavy duty jobs:

Do...consider dry cleaning methods first such as a mop, broom, rag or wire brush. Always keep a spill response kit on site.

Do...prepare the work area before power cleaning by using sand bags, rubber mats, vacuum booms, containment pads or temporary berms to keep wash water away from the gutters and storm drains.

Do...use vacuums or other machines to remove and collect loose debris or litter before applying water.

Do...obtain the property owner's permission to dispose *small amounts* of power washing waste water to landscaped, gravel or unpaved surfaces.

Do...check with your local sanitary sewer agency's policies on wash water disposal regulations. (See list on reverse side).

Do...be aware that if discharging to landscape areas, soapy wash water may damage landscaping. Residual wash water may remain on paved surfaces to evaporate. Sweep up solid residuals and dispose of properly. Vacuum booms are another option for capturing and collecting wash water.

Do not let...wash or waste water from sidewalk, plaza or building cleaning go into a street or storm drain.



Report illegal storm drain disposal,
Call Toll Free
1-800-506-2555

Using Cleaning Agents

Try using biodegradable/phosphate-free products. They are easier on the environment, but don't confuse them for being toxic free. Soapy water entering the storm drain system can impact the delicate aquatic environment.



When cleaning surfaces with a *high-pressure washer* or *steam cleaner*, additional precautions should be taken to prevent the discharge of pollutants into the storm drain system. These two methods of surface cleaning can loosen additional material that can contaminate local waterways.

Think Water Conservation

Minimize water use by using high pressure, low volume nozzles. Be sure to check all hoses for leaks.

Screening Wash Water

A thorough dry cleanup before washing exterior surfaces, such as buildings and decks *without loose paint*, sidewalks, or plaza areas should be sufficient to protect receiving waters. Keep debris from entering the storm drain after cleaning by first passing the wash water first through a “20 mesh” or finer screen to catch the solid materials, then disposing the mesh in a refuse container.

Drain Inlet Protection & Collection of Wash Water

- Prior to any washing, block all storm drains with an impervious barrier such as sandbags or berms, or seal the storm drain with plugs or rubber mats.
- Create a containment area with berms and traps or take advantage of a low spot to keep wash water contained.
- Wash vehicles and equipment on grassy or gravel areas so that the wash water can seep into the ground.
- Pump or vacuum up all wash water in the contained area.

Equipment and Supplies

For special materials, equipment and supplies:

- New Pig — (800) 468-4647
- Lab Safety Supply — (800) 356-0783
- C&H — (800) 558-90966
- W.W. Grainger — (800) 994-9174
- Cleaning Equipment Trade Association — (800) 441-0111

For Information:

For more information on the General Industrial Storm Water Permit contact:

State Water Resources Control Board (SWRCB)
(916) 657-1146 or www.swrcb.ca.gov/ or, at your Regional Water Quality Control Board (RWQCB).

Santa Ana Region (8)
California Tower
3737 Main Street, Ste. 500
Riverside, CA 92501-3339
(909) 782-4130

San Diego Region (9)
9771 Clairemont Mesa Blvd., Ste. A
San Diego, CA 92124
(619) 467-2952

Colorado River Basin Region (7)
73-720 Fred Waring Dr., Ste. 100
Palm Desert, CA 92260
(760) 346-7491

SPILL RESPONSE AGENCY:
HAZ-MAT: (909) 358-5055
HAZARDOUS WASTE DISPOSAL: (909) 358-5055
RECYCLING INFORMATION: 1-800-366-SAVE
TO REPORT ILLEGAL DUMPING OR A CLOGGED STORM DRAIN: 1-800-506-2555

To order additional brochures or to obtain information on other pollution prevention activities, call:
(909) 955-1111.

StormWater
CleanWater
PROTECTION PROGRAM

Riverside County gratefully acknowledges the State Water Quality Control Board and the American Public Works Association, Storm Water Quality Task Force for the information provided in this brochure.

DID YOU KNOW . . .

YOUR FACILITY MAY NEED A STORM WATER PERMIT?



Many industrial facilities and manufacturing operations must obtain coverage under the Industrial Activities Storm Water General Permit

FIND OUT
IF YOUR FACILITY MUST OBTAIN A PERMIT

StormWater Pollution . . . What you should know

Riverside County has two drainage systems - sanitary sewers and storm drains. The storm drain system is designed to help prevent flooding by carrying excess rainwater away from streets. Since the storm drain system does not provide for water treatment, it also serves the *unintended* function of transporting pollutants directly to our waterways.

Unlike sanitary sewers, storm drains are not connected to a treatment plant - they flow directly to our local streams, rivers and lakes.



In recent years, awareness of the need to protect water quality has increased. As a result, federal, state, and local programs have been established to reduce polluted stormwater discharges to our waterways. The emphasis of these programs is to prevent stormwater pollution since it's much easier, and less costly, than cleaning up "after the fact."

National Pollutant Discharge Elimination System (NPDES)

In 1987, the Federal Clean Water Act was amended to establish a framework for regulating industrial stormwater discharges under the NPDES permit program. In California, NPDES permits are issued by the State Water Resources Control Board (SWRCB) and the nine (9) Regional Water Quality Control Boards (RWQCB). In general, certain industrial facilities and manufacturing operations must obtain coverage under the Industrial Activities Storm Water General Permit if the type of facilities or operations falls into one of the several categories described in this brochure.

How Do I Know If I Need A Permit?

Following are ***general descriptions*** of the industry categories types that are regulated by the Industrial Activities Storm Water General Permit. Contact your local Region Water Quality Control Board to determine if your facility/operation requires coverage under the Permit.

➜ Facilities such as cement manufacturing; feedlots; fertilizer manufacturing; petroleum refining; phosphate manufacturing; steam electric power generation; coal mining; mineral mining and processing; ore mining and dressing; and asphalt emulsion;

➜ Facilities classified as lumber and wood products (except wood kitchen cabinets); pulp, paper, and paperboard mills; chemical producers (except some pharmaceutical and biological products); petroleum and coal products; leather production and products; stone, clay and glass products; primary metal industries; fabricated structural metal; ship and boat building and repairing;

➜ Active or inactive mining operations and oil and gas exploration, production, processing, or treatment operations;

➜ Hazardous waste treatment, storage, or disposal facilities;

➜ Landfills, land application sites and open dumps that receive or have received any industrial waste; unless there is a new overlying land use such as a golf course, park, etc., and there is no discharge associated with the landfill;

➜ Facilities involved in the recycling of materials, including metal scrap yards, battery reclaimers, salvage yards, and automobile junkyards;

➜ Steam electric power generating facilities, facilities that generate steam for electric power by combustion;

➜ Transportation facilities that have vehicle maintenance shops, fueling facilities, equipment cleaning operations, or airport deicing operations. This includes school bus maintenance facilities operated by a school district;

➜ Sewage treatment facilities;

➜ Facilities that have areas where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water.

How do I obtain coverage under the Industrial Activities Storm Water General Permit?

Obtain a permit application package from your local Regional Water Quality Control Board listed on the back of this brochure or the State Water Resources Control Board (SWRCB). Submit a completed Notice of Intent (NOI) form, site map and the appropriate fee ($250 or $500) to the SWRCB. Facilities must submit an NOI thirty (30) days prior to beginning operation. Once you submit the NOI, the State Board will send you a letter acknowledging receipt of your NOI and will assign your facility a waste discharge identification number (WDID No.). You will also receive an annual fee billing. These billings should roughly coincide with the date the State Board processed your original NOI submittal.

What are the requirements of the Industrial Activities Storm Water General Permit?

The basic requirements of the Permit are:

1. The facility must eliminate any non-stormwater discharges or obtain a separate permit for such discharges.

2. The facility must develop and implement a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must identify sources of pollutants that may be exposed to stormwater. Once the sources of pollutants have been identified, the facility operator must develop and implement Best Management Practices (BMPs) to minimize or prevent polluted runoff.

   Guidance in preparing a SWPPP is available from a document prepared by the California Storm Water Quality Task Force called the California Storm Water Best Management Practice Handbook.

3. The facility must develop and implement a Monitoring Program that includes conducting visual observations and collecting samples of the facility's storm water discharges associated with industrial activity. The General Permit requires that the analysis be conducted by a laboratory that is certified by the State of California.

4. The facility must submit to the Regional Board, every July 1, an annual report that includes the results of its monitoring program.

A Non-Storm Water Discharge is... *any discharge to a storm drain system that is not composed entirely of storm water. The following non-storm water discharges are authorized by the General Permit: fire hydrant flushing; potable water sources, including potable water related to the operation, maintenance, or testing of potable water systems; drinking fountain water; atmospheric condensates including refrigeration, air conditioning, and compressor condensate; irrigation drainage; landscape watering; springs; non-contaminated ground water; foundation or footing drainage; and sea water infiltration where the sea waters are discharged back into the sea water source.*

A BMP is . . . *a technique, process, activity, or structure used to reduce the pollutant content of a storm water discharge. BMPs may include simple, non-structural methods such as good housekeeping, staff training and preventive maintenance. Additionally, BMPs may include structural modifications such as the installation of berms, canopies or treatment control (e.g. setting basins, oil/water separators, etc.)*



WARNING*: There are significant penalties for non-compliance: a minimum fine of $5,000 for failing to obtain permit coverage, and, up to $10,000 per day, per violation plus $10 per gallon of discharge in excess of 1,000 gallons.*

Saltwater Pools

- Salt water pools, although different from regular pools, are in fact, sanitized using chlorine. A salt-chlorine generator separates the chlorine and sodium molecules in salt and reintroduces them into the pool water. The same harmful effects of chlorine still apply.
- A salt water pool is still maintained with chemicals such as Muriatic acid, soda ash and sodium carbonate to help keep a proper pH, total Alkalinity, Calcium Hardness and Stabilizer levels.



- It may be illegal to discharge salt water to land. The salt may kill plants and the build-up of salt in soil puts animals, plants, and groundwater at risk. Consult your city representatives to determine local requirements regarding salt water drainage.

NEVER put unused chemicals into the trash, onto the ground or down a storm drain.

IMPORTANT: The discharge of pollutants into the street, gutter, storm drain system or waterways - without a permit or waiver - is strictly prohibited by local ordinances, state and federal law. Violations may result in monetary fines and enforcement actions.

Helpful telephone numbers and links

Riverside County Water Agencies:

City of Banning	(951) 922-3130
City of Beaumont/Cherry Valley	(951) 845-9581
City of Blythe	(760) 922-6161
City of Coachella	(760) 398-3502
City of Corona	(951) 736-2263
City of Hemet	(951) 765-3710
City of Norco	(951) 270 5607
City of Riverside Public Works	(951) 351-6140
City of San Jacinto	(951) 654-4041
Coachella Valley Water District	(760) 398-2651
Desert Water Agency (Palm Springs)	(760) 323-4971
Eastern Municipal Water District	(951) 928-3777
Elsinore Valley Municipal Water District	(951) 674 3146
Elsinore Water District	(951) 674-2168
Farm Mutual Water Company	(951) 244-4198
Idyllwild Water District	(951) 659-2143
Indio Water Authority	(760) 391-4129
Jurupa Community Services District	(951) 685-7434
Lee Lake Water	(951) 658-3241
Mission Springs Water	(760) 329-6448
Rancho California Water District	(951) 296-6900
Ripley, CSA #62	(760) 922-4951
Riverside Co. Service Area #51	(760) 227-3203
Rubidoux Community Services District	(951) 684-7580
Valley Sanitary District	(760) 347-2356
Western Municipal Water District	(951) 789-5000
Yucaipa Valley Water District	(909) 797-5117

CALL 1-800-506-2555 to:

- Report clogged storm drains or illegal storm drain disposal from residential, industrial, construction and commercial sites into public streets, storm drains and/or water bodies.
- Find out about our various storm drain pollution prevention materials.
- Locate the dates and times of Household Hazardous Waste (HHW) Collection Events.
- Request adult, neighborhood, or classroom presentations.
- Locate other County environmental services.
- Receive grasscycling information and composting workshop information.

Or visit our
Riverside County Flood Control and Water Conservation District
website at: www.rcflood.org

Other links to additional storm drain pollution information:

- County of Riverside Environmental Health: www.rivcoeh.org
- State Water Resources Control Board: www.waterboards.ca.gov
- California Stormwater Quality Association: www.casqa.org
- United States Environmental Protection Agency (EPA): www.epa.gov/compliance/assistance (compliance assistance information)

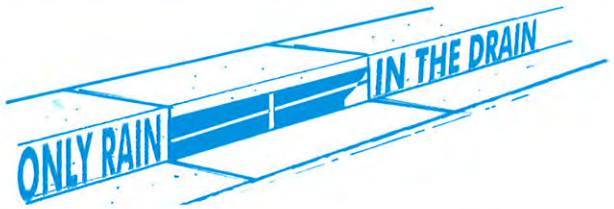
Riverside County's, "Only Rain Down the Storm Drain" Pollution Prevention Program gratefully acknowledges the Bay Area Stormwater Management Agencies Association and the Cleaning Equipment Trade Association for information provided in this brochure.

Guidelines for Maintaining your...



Swimming Pool, Jacuzzi and Garden Fountain

Where does the water go?



Pool, Jacuzzi and Fountain wastewater and rain water runoff (also called stormwater) that reach streets can enter the storm drain and be conveyed directly into local streams, rivers and lakes.



A storm drain's purpose is to prevent flooding by carrying rain water away from developed areas. Storm drains are not connected to sanitary sewers systems and treatment plants!

Wastewater, from residential swimming pools, Jacuzzis, fishponds and fountains, often contains chemicals used for sanitizing or cleansing purposes. Toxic chemicals (such as chlorine or copper-based algaecides) may pollute the environment when discharged into a storm drain system.

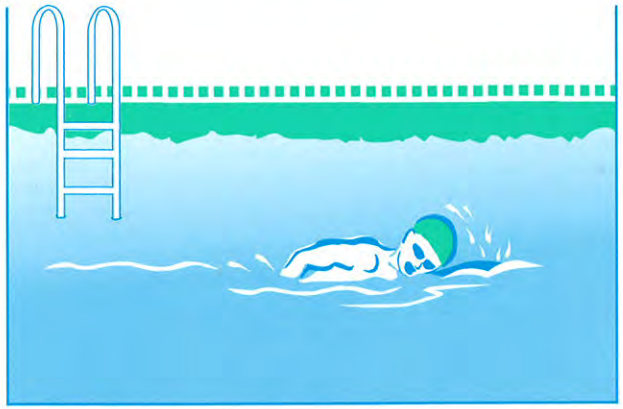
The Cities and County of Riverside have adopted ordinances that prohibit the discharge of wastewater to the street and storm drain system.



Discharge Regulations

Regulatory requirements for discharging wastewater from your pool may differ from city to city. Chlorinated water should not be discharged into the street, storm drain or surface waters. Check with your water agency to see if disposal to the sanitary sewer line is allowed for pool discharges (see reverse for Riverside County sewer agencies).

If allowed, a hose can be run from the pool Jacuzzi, or fountain to the private sewer cleanout, washing machine drain or a sink or bathtub.



If you cannot discharge to the sewer, you may drain your fountain, pool, or jacuzzi to your landscaping by following these guidelines:

First, reduce or eliminate solids (e.g. debris, leaves or dirt) in the pool water and allow the chemicals in the pool water to dissipate before draining the pool (this could take up to 7 days, verify using a home pool test kit).

Second, slowly drain to a landscaped area away from buildings or structures. Control the flow to prevent soil erosion; it may take more than one day to empty. Do not allow sediment to enter the street, gutter or storm drain.

Maintenance & Chemicals



Cleaning Filters

Filter rinse water and backwash must be discharged to the sanitary sewer, on-site septic tank and drain field system (if properly designed and adequately sized), or a seepage pit. Alternatively, rinse water or backwash may be diverted to landscaped or dirt areas. Filter media and other non-hazardous solids should be picked up and disposed of in the trash.

Algaecides

Avoid using copper-based algaecides unless absolutely necessary. Control algae with chlorine, organic polymers or other alternatives to copper-based pool chemicals. Copper is a heavy metal that can be toxic to aquatic life when you drain your pool.

Chemical Storage and Handling

- Use only the amount indicated on product labels
- Store chlorine and other chemicals in a covered area to prevent runoff. Keep out of reach of children and pets.
- Chlorine kits, available at retail swimming pool equipment and supply stores, should be used to monitor the chlorine and pH levels before draining your pool.
- Chlorine and other pool chemicals should never be allowed to flow into the gutter or storm drain system.

Take unwanted chemicals to a Household Hazardous Waste (HHW) Collection Event. There's no cost for taking HHW items to collection events – it's FREE! Call **1-800-506-2555** for a schedule of HHW events in your community.





For more information,
please call the
Riverside County's
"Only Rain Down the Storm Drain"
Pollution Prevention Program
at 1-800-506-2555 or
www.rcflood.org

or

To Report A Sewage Spill:
During normal business hours
(8:00 a.m to 5:00 p.m), call
Riverside County Department of
Environmental Health
at 951-358-5172 or 1-800-304-2226
www.rivcoeh.org

After business hours, on weekends
or holidays, call toll free
1-800-506-2555

For emergencies, dial 911.

www.NOWRA.ORG - A website providing resources and education on the design and maintenance of septic tank systems.

www.epa.gov/owm/septic - Including septic tank information, the Environmental Protection Agency has a large E-vault of environmental information and resources.

The Riverside County "Only Rain Down the Storm Drain" Pollution Prevention Program gratefully acknowledges Orange County's Storm Water Program for their contribution to this brochure.

Stormwater Pollution

What you should know...

Tips for Maintaining a Septic Tank System



Water quality responsibility begins at YOUR front door.

Tips for Maintaining a Septic Tank System

Households that are not served by public sewers usually depend on a septic tank system* to treat and dispose of wastewater. A well designed, installed and regularly maintained septic system can provide years of reliable service. However, when these systems fail to operate properly, significant damage can occur to property and the environment. The homeowner is responsible for these damages and may be subject to fines. Therefore, it is important to follow these simple tips when using a septic tank system:

Conserve Water

The more wastewater produced, the more the soil must absorb. By conserving water, the life of the drain field will be extended and the chance of a system failure is decreased.

Reduce your water use by:

- Using water saving devices
- Repairing leaky faucets and plumbing fixtures
- Reducing toilet reservoir volume or flow
- Taking shorter showers
- Washing only full loads of dishes and laundry
- Limit the number of highwater use activities done at the same time.

Never Flush Harmful Materials Into The Septic Tank

Grease, cooking oils, newspaper, paper towels, rags, coffee grounds, sanitary napkins and cigarettes do not easily decompose in the tank. Chemicals such as solvents, soils, unused prescriptions, over-the-counter medications, paints and pesticides are harmful to the system's operation and may pollute the groundwater. For information on the proper disposal of household hazardous waste, call toll free 1-800-506-2555. Also, never use septic tank additives, commercial septic tank cleaners, yeast, sugar, etc. These products are not necessary and some may be harmful to your system.

Keep Runoff Away From The System

Water from surfaces such as roofs, driveways or patios should be diverted away from the septic tank and drain field area.

Protect The System From Damage

Don't park, pave or put livestock or heavy objects, equipment or machinery over the drainfield. The pressure can compact the soil or damage pipes. Also check your septic system map prior to constructing buildings or a pool on the property. The area over the absorption field and tank should be left undisturbed with only grass on top. Trees or shrubs, which may clog and damage the drain, should be removed from the area.

Keep Records

Chart the location of your septic tank and keep up-to-date service and repair records for future reference.

Inspect The System

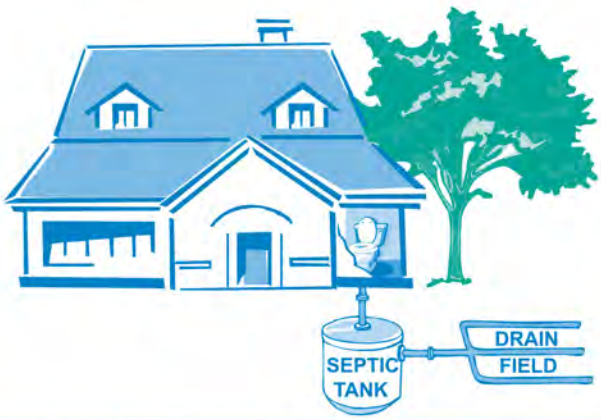
Monitor the system yearly to ensure it is not at an "early warning level." Inspect the drain field and down slope areas for odors, wet spots, or surfacing of sewage. This may be an early indication of a problem with the system. Also, have the system inspected by a licensed septic tank professional every three to five years.

Pump The Tank When Needed

Routine pumping can prevent failures, such as clogging and backup into the home. Never pump full or failing septic systems to the street or storm drain.

Never Enter The Septic Tank

Poisonous gases or the lack of air can be fatal. A certified professional should complete any work to the tank.



* Contact your local collection agency or city for assistance in determining if your home is served by a septic tank.

Stormwater Pollution Found in Your Area!

This is not a citation.

This is to inform you that our staff found the following pollutants in the storm sewer system in your area. This storm sewer system leads directly to

_____ .

- ❑ Motor oil
- ❑ Oil filters
- ❑ Antifreeze/ transmission fluid
- ❑ Paint
- ❑ Solvent/degreaser
- ❑ Cooking grease
- ❑ Detergent
- ❑ Home improvement waste (concrete, mortar)
- ❑ Pet waste
- ❑ Yard waste (leaves, grass, mulch)
- ❑ Excessive dirt and gravel
- ❑ Trash
- ❑ Construction debris
- ❑ Pesticides and fertilizers
- ❑ Other

_____





For more information or to report an illegal discharge of pollutants, please call:

Riverside County Residents, Call . . .
1-800-506-2555

WHEN IT RAINS
IT DRAINS

EPA
United States
Environmental Protection
Agency

www.epa.gov/npdes/stormwater

EPA 833-F-03-002
April 2003

Stormwater runoff is precipitation from rain or snowmelt that flows over the ground. As it flows, it can pick up debris, chemicals, dirt, and other pollutants and deposit them into a storm sewer system or waterbody.

Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.

Remember: Only Rain Down the Drain

To keep the stormwater leaving your home or workplace clean, follow these simple guidelines:



- Use pesticides and fertilizers sparingly
- Repair auto leaks.
- Dispose of household hazardous waste, used auto fluids (antifreeze, oil, etc.), and batteries at designated collection or recycling locations.
- Clean up after your pet.
- Use a commercial car wash or wash your car on a lawn or other unpaved surface.
- Sweep up yard debris rather than hosing down areas. Compost or recycle yard waste when possible.
- Clean paint brushes in a sink, not outdoors. Properly dispose of excess paints through a household hazardous waste collection program.
- Sweep up and properly dispose of construction debris like concrete and mortar.



STREAM STABILIZATION FACTS

for Home and Property Owners in Riverside County

Homeowners living adjacent to streams, lakes and rivers may be impacted by bank erosion or sediment deposition that can occur due to natural processes or man-made causes. Homeowner efforts to mitigate impacts to their property from erosion or sedimentation can negatively affect native plants and animals, lessen a watercourse's ability to convey storm flows, cause erosion or sedimentation problems on other properties and/or cause flooding. Below is some guidance regarding actions a homeowner should take before attempting to protect their property:

- In some cases, any alteration of a watercourse may be prohibited by local land-use regulations, e.g., a "drainage easement", "flowage easement", "floodplain" or "Environmental Constraint Sheet". You should contact your local City or County building or grading department to determine if these limitations apply to watercourses in or adjacent to your property.

- In cases where alterations are not expressly prohibited, grading, filling or otherwise altering a watercourse - even those that flow intermittently, such as dry washes that only flow when it rains – may require approval from one or more of the following regulating agencies:

REGULATING AGENCY	POTENTIAL REGULATORY PERMIT	WHERE TO CONTACT
Local (City, County) land use authority *	• Grading Permit • Floodplain Review	White pages under City/County Government
California Department of Fish and Game*	• Fish and Game Section 1602 Agreements	www.dfg.ca.gov
US Army Corps of Engineers*	• Clean Water Act Section 404 Permit	www.usace.army.mil
California State Water Resources Control Board*	• Clean Water Act Section 401 Water Quality Certification or Waste Discharge Requirements	www.swrcb.ca.gov

*Fees may be applicable.

- Property owners should **CONTACT EACH REGULATING AGENCY** (listed above) for the necessary approval(s) **BEFORE**:

1. ***Removing*** soil, rock or plant material from a streambed or the bank of a stream;

(over)

More on Stream Stabilization

2. ***Placing*** any waste, material (dirt, rubble) or structures (dams, revetments) on a stream bank or within a stream;

3. ***Diverting, obstructing, or otherwise modifying*** the bed, channel, or bank of any river, stream or lake;

4. ***Dumping*** *or* ***depositing*** debris, liquid or solid waste, soil, manure or other material that may be conveyed into a wash, stream, river or lake; or

5. ***Armoring*** *or* ***stabilizing*** a stream bank against stream bank erosion.

Some other examples of regulated stream alteration activities include vegetation removal or construction of road crossings or corrals. Property owners are responsible for obtaining all necessary approvals prior to commencing any of the aforementioned activities.

- *The Natural Resources Conservation Service (NRCS)* makes onsite recommendations (currently free of charge) to private land owners for effective erosion control. For help in protecting your property from stream erosion please contact:

NATURAL RESOURCES CONSERVATION SERVICE (NRCS)	**CONTACT**	**PHONE NO.**
Riverside County (West of the San Jacinto Mtns.)	Robert Hewitt	(951) 654-7139
Beaumont and Banning Area	Jim Earsom	(909) 799-7407
Desert Area	Sam Aslam	(760) 347-7658
Blythe	Sam Cobb	(760) 922-3446

- ***YOU*** **can help protect water quality**:
  Prevent trash, debris, manure and waste of any kind from washing off home sites and streets into gutters, storm drains and dry watercourses. During storms, these watercourses can convey pollution into more sensitive streams and rivers.

County-wide Service Information

- Household hazardous wastes (oil-based paints, pesticides, antifreeze, motor oil, batteries and fluorescent bulbs) must never be disposed of in or near watercourses. You may find your nearest household hazardous waste disposal site by calling **(800) 304-2226 or on the web at www.rivcowm.org**



- Report illegal grading or dumping in watercourses by contacting your City or County Code Enforcement Department, or call **(800) 506-2555.**

- Report a non-emergency crime such as dumping by contacting your City Police or County Sherriff's Department, or call **(800) 506-2555.**

Clean and healthy creeks, river, lakes and streams are important to Riverside County. However, equestrian enthusiasts and common outdoor equestrian activities can lead to water pollution, if owners are not careful.

Horse waste and equestrian care products can be washed into streets and storm drains, when residents are not careful. Unlike sanitary sewers (from sinks and toilets), storm drains flow directly (untreated) to our creeks, rivers, lakes and streams.

You would never put animal waste or products into our creeks, river, lakes or streams, so don't let them enter the storm drains. Follow these easy tips to help prevent water pollution while grooming or feeding horses, or constructing a stable.

Resources

Contact your city's storm water representative for any applicable local ordinances.

For more information,
please call the Riverside County's
"Only Rain Down the Storm Drain"
1-800-506-2555
or visit the website at
www.rcflood.org

- Report a spill, an illegal storm drain disposal or clogged storm drains.
- Obtain pollution prevention information for Riverside County Residents, Businesses, Developers, Industries and Municipalities.
- Schedule pollution prevention education for adults, groups, or school presentations.
- Locate Household Hazardous Waste Collection Centers.

FOR SPILL EMERGENCIES, PLEASE CALL 911

Riverside County gratefully acknowledges the Orange County Storm Water Program for the information provided in this brochure.

StormWater Pollution

What you should know...



...ONLY RAIN...
DOWN THE STORM DRAIN

Environmental responsibility begins with YOU.

Never allow horse waste or care products to enter the street or storm drain.

Grooming

- Use less-toxic alternatives for grooming. Even biodegradable products can be harmful to humans, marine life and the environment. Follow instructions on the products and clean up spills.
- When washing horses, either allow wash water to seep into the ground or wash in an area that is routed to the sanitary sewer. Do not let wash water enter the storm drain or any bodies of water.
- Conserve water by using a spray nozzle with an automatic shut-off. Turn off the water or kink the hose when not in use.

Pasture Management

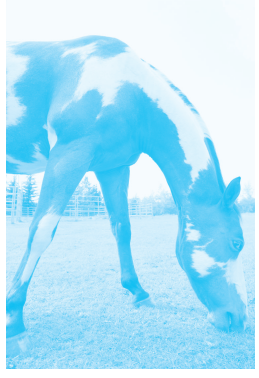
- Horse holding areas should be swept or shoveled at least once per day. Never hose down these areas! The waste could end up in a stream or storm drain.



- Paddocks should be cleaned at least twice per week during the rainy season and once per week the rest of the year.

Grazing

- Establish healthy and vigorous pastures with at least three inches of leafy material.
- During rainfall, consider indoor feeding, a practice that keeps manure under a roof and away from runoff.



Collection and Storage

- Store animal waste in a sturdy, seepage-free unit that is enclosed or under cover.
- Line waste pits or trenches with an impermeable layer.
- Do not store manure on-site for more than one week.

Use and Disposal

- Compost soiled bedding and manure. See http://compostingcouncil.org for more information.
- Donate composted material to local greenhouses, nurseries and botanical parks.
- Transport manure to topsoil companies or composting centers.

Facility Design

- If you are constructing or re-building a stable, have your engineer check the County's website at www.ocwatersheds.com for information about facility design.

Remember, good land management protects horse health and water quality. A horse property that is managed well can also prevent disputes with neighbors, attract wildlife and make horse care more enjoyable.



APPENDIX G-2:

Water Supply Assessment Update

This Page Intentionally Left Blank

FUSCOE ENGINEERING

TECHNICAL MEMORANDUM

Arantine Hills Specific Plan Amendment No. 3

Water Supply Assessment Update

PREPARED FOR: Guardian Capital

PREPARED BY: Stephanie Castle Zinn and Nathan Lacy, Fuscoe Engineering, Inc

DATE: 10/17/2019

Introduction

The purpose of this memorandum is to provide a summary of the changes to the Water Supply Assessment (WSA) for the Arantine Hills Specific Plan (AHSP) within the City of Corona (City), associated with the AHSP Amendment No. 3. The Amendment No. 3 of the AHSP (referred to as "Project") will include additional proposed land use areas that will generate new water demands. These changes require an analysis to prove there is adequate water supply to meet these additional proposed demands beyond what was provided in the original WSA.

The approved AHSP under Amendment No. 2 ("Approved Plan"), allows for 80,000 SF of commercial use on 10.03 acres. Under the proposed Project, the boundary of AHSP will increase by 17.85 acres. The Project includes 21.67 acres designated for commercial use and 6.21 acres designated for open space. The commercial use designated in the Project includes 134,378 SF of general commercial plus a 135-room hotel. This represents an increase of 54,378 SF (1.248 acres) of commercial space, approximately 24,786 SF of hotel area across 135 rooms (0.569 acres) and 2.96 acres of irrigated open space.

The WSA was submitted in August 2015 and utilized information from the 2010 Urban Water Management Plan (UWMP). Since the original WSA, the City updated their water planning documentation and submitted the 2015 UWMP (approved in July 2016). Therefore, this analysis includes a review of the 2010 and 2015 UWMPs to ensure adequate water supplies exist to serve the expanded areas associated with the Project.

Project Land Use and Water Demands

The original WSA employed water unit flow factors from the City's Water Master Plan (WMP). The WMP was approved by the City in 2005. Following this same methodology, total demands for the

Project is calculated in gallons per day (gpd) and converted to acre feet per year (AFY) to be consistent with UWMP water supply and demand projections as shown in Table 1.

Table 1 - Additional Project Demand by Land Use

Land Use	Additional Acres in Amendment No. 3	Water Unit Flow Factor (gpd/ac)	Total Demand (gpd)	Total Demand (AFY)
General Commercial (GC)	1.82[1]	1,610	2,930.2	3.28
Open Space (OS)	2.96[2]	1,000	2,960	3.32
Total Additional Water Demand from Project			5,890.2	6.60
Original Project WSA Water Demand Estimate			710,265.8	795.6
Total New Project Water Demand			716,156.0	802.2

Notes
[1] General Commercial only includes hotel (135 rooms over 0.569 ac) and commercial building footprints (54,378 sf or 1.248 ac).
[2] Open Space acreage above only includes irrigated land which represents 2.96 acres of the total 6.21 acres of Open Space associated with the AHSP Amendment No. 3.

As shown above in Table 1, the original water demands projected in the WSA for the AHSP is 795.6 AFY. With the additional land uses associated with the Project, water demands for the AHSP will increase by 6.60 AFY for a total new AHSP water demand of 802.2 AFY. To determine if the City has the ability to provide water supply to the additional demand from the Project, the new total AHSP water demand is compared to the 2010 and 2015 UWMPs as described below.

2010 and 2015 UWMP Supply and Demand Reliability Comparison

As mentioned above, the original WSA utilized data from the 2010 UWMP. Since that time, the 2015 UWMP for the City was approved. Therefore, it is important to compare the findings of the 2010 and 2015 UWMPs along with the additional water demands associated with the Project. Table 2 below shows the supply vs demand reliability calculations from the 2010 UWMP. The grey highlighted rows show the available surplus (supply – demand) in AFY for each scenario: Normal Year (NY), Single Dry Year (SDY), and Multiple Dry Years (MDY).

Table 2 - 2010 UWMP Reliability Projections

Normal Year (AFY)					
	2015	2020	2025	2030	2035
Total Supply	71,640	76,272	78,549	76,713	75,192
Total Demand	46,110	43,807	44,424	45,123	45,878
Difference (S-D)	25,530	32,465	34,125	31,590	29,314
Difference % of S	36%	43%	43%	41%	39%
Difference % of D	55%	74%	77%	70%	64%
Single Dry Year (AFY)					
	2015	2020	2025	2030	2035
Total Supply	63,131	67,612	69,517	67,834	66,281
Total Demand	53,826	51,137	51,857	52,673	53,555

Difference (S-D)	9,305	16,475	17,660	15,161	12,726
Difference % of S	15%	24%	25%	22%	19%
Difference % of D	17%	32%	34%	29%	24%
Multiple Dry Years (AFY)					
	2015	2020	2025	2030	2035
Total Supply	60,115	63,686	64,065	63,343	62,791
Total Demand	53,826	51,137	51,857	52,673	53,555
Difference (S-D)	6,289	12,549	12,208	10,670	9,236
Difference % of S	10%	20%	19%	17%	15%
Difference % of D	12%	25%	24%	20%	17%

Table 3 below similarly shows the supply vs demand reliability calculations from the 2015 UWMP. The grey highlighted rows show the available surplus (supply – demand), denoted as "Difference (S-D)", in AFY for each scenario: Normal Year (NY), Single Dry Year (SDY), and Multiple Dry Years (MDY).

Table 3 - 2015 UWMP Reliability Projections

Normal Year (AFY)					
	2020	2025	2030	2035	2040
Total Supply	56,396	56,396	56,396	56,396	56,396
Total Demand	39,533	39,514	39,555	39,636	39,636
Difference (S-D)	16,863	16,882	16,841	16,760	16,760
Difference % of S	30%	30%	30%	30%	30%
Difference % of D	43%	43%	43%	42%	42%
Single Dry Year (AFY)					
	2020	2025	2030	2035	2040
Total Supply	56,396	56,396	56,396	56,396	56,396
Total Demand	47,616	47,486	47,523	47,609	47,699
Difference (S-D)	8,780	8,910	8,873	8,787	8,697
Difference % of S	16%	16%	16%	16%	15%
Difference % of D	18%	19%	19%	18%	18%
Multiple Dry Years (AFY)					
	2020	2025	2030	2035	2040
Total Supply	56,396	56,396	56,396	56,396	56,396
Total Demand	50,463	51,171	51,986	52,871	53,861
Difference (S-D)	5,933	5,225	4,410	3,525	2,535
Difference % of S	11%	9%	8%	6%	4%
Difference % of D	12%	10%	8%	7%	5%

It is relevant to compare the differences for the Multiple Dry Year (MDY) scenario between the 2010 and 2015 UWMPs as this represents the worst-case scenario as compared to Normal Dry Year (NDY) and Single Dry Year (SDY) referenced above. The MDY from the 2010 UWMP projects a surplus of 6,289 AFY that increases to 9,236 AF from 2015-2035. The MDY from the 2015 UWMP projects a surplus of 5,933 AFY that decreases to 2,535 AFY from 2020-2040. In summary, even in the MDY scenario summarized in the 2010 and 2015 UWMPs, there is always a surplus of water available.

As shown below, in terms of projected water demand capacity/surplus calculated from the 2015 UWMP projections as compared to the demands from the new AHSP of 802.2 AFY, the Project did

not result in a deficit in any scenario. Below in Table 4 are the surplus calculations for each climate scenario from the 2015 UWMP projections minus the AHSP new water demand.

Table 4 – 2015 UWMP Surplus – AHSP Water Demand

	2020	2025	2030	2035	2040
Normal Year (AFY)	16,061	16,080	16,039	15,958	15,958
Single Dry Year (AFY)	7,978	8,108	8,071	7,985	7,895
Multiple Dry Years (AFY)	5,131	4,423	3,608	2,723	1,733

As shown above, there is surplus even in the MDY scenario in the 2015 UWMP including the AHSP new water demand. The AHSP's total water demand increased from 795.6 AFY to 802.2 AFY from the Approved Plan to the current Project. The minimum surplus of 2,535 in 2040 (Table 3) in the MDY scenario represents the worst case which is greater than the proposed increase from the Project of 6.60 AFY and the total AHSP new water demand of 802.2 AFY. Therefore, it is reasonable to conclude that there are still adequate water supplies to provide for the proposed Project.

Conclusion

Overall, in terms of water supply reliability, the water demand from additional commercial and open space land uses associated with the Project are in-line with the conclusion of the original WSA. In the long run, the addition of the Project and the associated water demands to the AHSP do not significantly impact the ability of the water provider to supply water to AHSP in multiple climate scenarios (i.e. Normal, Single Dry, or Multiple Dry Years). Therefore, it can be concluded that there are adequate supplies to serve the AHSP Amendment No. 3 anticipated water demand increases as well as other demands within the City's jurisdiction.

APPENDIX G-3:

Preliminary Hydrology Analysis Tentative Tract Map 37788

This Page Intentionally Left Blank

Preliminary Hydrology Analysis
Tentative Tract Map 37788
'Bedford' Commercial Site

Prepared for

Arantine Hills Holdings, LP






November 2019

Hunsaker & Associates

Preliminary Hydrology Analysis
Tentative Tract Map 37788
'Bedford' Commercial Site

November 2019

Hunsaker & Associates

PRELIMINARY HYDROLOGY ANALYSIS
Tentative Tract Map 37788
Bedford Commercial Site

FOR

ARANTINE HILLS HOLDINGS, LP

85 ENTERPRISE, SUITE 450
ALISO VIEJO, CA 92656

CITY OF CORONA
COUNTY OF RIVERSIDE
CALIFORNIA

PREPARED BY:

HUNSAKER & ASSOCIATES
IRVINE, INC.
PLANNING ▪ ENGINEERING ▪ SURVEYING

2900 ADAMS STREET; SUITE A-15
RIVERSIDE CA, 92504

REGISTERED PROFESSIONAL ENGINEER
BRIAN ROBERT LOWELL
No. 74550
CIVIL
STATE OF CALIFORNIA

Brian R. Lowell, R.C.E. 74550

November 2019

W.O. # 2749-18

TABLE OF CONTENTS

SECTION 1 – SUMMARY ____ 1-1
INTRODUCTION ____ 1-1
EXISTING CONDITIONS ____ 1-1
PROPOSED DRAINAGE FACILITIES ____ 1-1
METHODOLOGY ____ 1-4
CONCLUSION ____ 1-4
LOCATION MAP ____ 1-5

SECTION 2 – RIVERSIDE COUNTY FLOOD CONTROL DATA ____ 2-1
SOILS GROUP MAP ____ 2-3
SLOPE-INTENSITY DURATION CURVE ____ 2-5
INTENSITY DURATION CURVE ____ 2-7

SECTION 3 – HYDROLOGY CALCULATIONS ____ 3-1
POST DEVELOPMENT HYDROLOGY AREA 'A' – RATIONAL METHOD ____ 3-3
PRE DEVELOPMENT HYDROLOGY AREA 'B' – RATIONAL METHOD ____ 3-31
POST DEVELOPMENT HYDROLOGY AREA 'B' – RATIONAL METHOD ____ 3-43
PRE DEVELOPMENT HYDROLOGY AREA 'B' – UNIT HYDROGRAPH ____ 3-91
POST DEVELOPMENT HYDROLOGY AREA 'B' – UNIT HYDROGRAPH ____ 3-169

SECTION 4 – INFILTRATION TEST ____ 4-1

SECTION 5 – HYDROLOGY MAPS ____ 5-1

SECTION 6 – REFERENCE HYDROLOGY REPORTS ____ 6-1
C.A.S.C. MASTER DRAINAGE PLAN (DEC. 2015) (Excerpts)
TRACT 36294 HYDROLOGY REPORT (Hunsaker & Assoc. April 2017) (Excerpts)

SECTION 1 - Summary

Introduction

The purpose of this report is to present the backup hydrology and hydraulics that will be used for the final engineering portion of Bedford Commercial Site of the Bedford project in the City of Corona. Furthermore, this report is supplemental to the previous overall *"Hydrology Study for Tract 36294"* prepared by Hunsaker & Associates in April 2017, as well as the *"Master Drainage Plan for Tract 36294 – Mass-Grading"* by CASC Engineering dated December 2015. Please refer to these reports for analysis pertaining to mitigation and basin sizing.

The proposed commercial development is located in the southeastern portion of the City of Corona, Riverside County, California on a portion of the 276 acre parcel owned by Arantine Hills Holdings, LP. The original commercial phase of the project consisted of approximately 10.03 acres of the 276 acre site, located on the northern most portion of the overall project. The proposed development expands the commercial site northeasterly, adding an additional 17.85 acres. The total combined lot area is 27.88 acres with development occurring on 23.5 acres. Development of this site will require the preparation of a new tentative tract map, TTM 37788. The commercial phase of the Bedford project is bounded by Eagle Glen Parkway to the north, Bedford Canyon Road to the west, Hudson House Drive (proposed) to the south and Interstate 15 to the east. Generally, the project is situated west of Interstate 15 and south of Eagle Glen Parkway as shown on the included vicinity map.

Existing Conditions

The project site, TTM 37788, consists of vacant undeveloped land. This area is comprised of various soil types, as is shown on the included soils map. The site is situated within the Bedford Wash / Temescal Wash sub-watershed portion of the Santa Ana River watershed. Furthermore, the project lies along the northerly banks of Bedford Canyon Wash. The topography of the site is typical of the Corona Valley in that it exhibits gently rolling topography with elevations ranging from approximately 900 feet to 1,150 feet above mean sea level.

Proposed Drainage Facilities

The proposed development, TTM 37788, divides the site into two onsite drainage areas "A" and "B". Drainage management area 'A' consists of southwesterly most 9.7 acres. Run-off from DMA 'A' is collected by a series of private catch basins which are connected to a private storm drain system within the commercial site, flowing easterly. Ultimately connecting to the existing backbone storm drain system within Bedford Canyon Road at its interstation with the Lift Station access road. All run-off from DMA 'A' has already been accounted for in the overall hydrology master drainage plan for Tract 36294. The existing infiltration basin has been designed to accommodate these flows, no additional mitigation measures are required.

Similarly, drainage management area 'B' consists of 13.8 acres that are adjacent to Tract 36294. Run-off from DMA 'B' is collected by a series of private catch basins which are connected to the private storm drain system flowing southeasterly towards and into a proposed water quality basin located in the southeastern portion of the site.

All flows generated from the commercial phase will eventually be conveyed to Bedford Canyon Wash, where it will follow the path of the Santa Ana Watershed towards the Pacific Ocean.

The backbone facilities for DMA 'A" have been designed to convey the 100-year storm event (see previous master drainage studies), we have analyzed the proposed improvements associated with the commercial phase based on the developed conditions for the 2-year, 10-year, and 100-year storm events. RCFC&WCD rational method was utilized to determine developed flow rates.

The proposed facilities for DMA 'B' are designed to convey the 100-year storm event, we have analyzed the site based on the pre and post development conditions for the 2-year, 10-year, and 100-year storm events. RCFC&WCD rational and unit hydrograph methodologies were utilized to determine pre and post development flow rates. The results of this analysis are summarized in the following tables.

Drainage Management Area 'B'

All storm run-off from the developed areas within DMA 'B' drain to the proposed water quality basin located in the southeastern portion of the site. Any water discharged from the site will be directed via underground storm drain pipes and outlet into Bedford Canyon Wash, where it will follow the path of the Santa Ana River Watershed towards the Pacific Ocean.

The proposed development will increase the peak flow rate and volume of storm water run-off, the largest peak flow rate increase was experienced during the 2 year 1 hour storm event, where the anticipated flow rate increased by 5.1 cfs, as compared to natural condition. This increase is being mitigated by the proposed bio-retention / detention basin located on the eastern portion of the site. Basin routing calculations will be provided during the final engineering.

DMA 'B' - UNIT HYDROGRAPH - PEAK FLOW RATE (cfs)						
	2 YEAR		10 YEAR		100 YEAR	
	EXISTING	DEVELOPED	EXISTING	DEVELOPED	EXISTING	DEVELOPED
1 HOUR	8.4	13.5	21.9	25.1	40.5	41.7
3 HOUR	4.6	9.4	15.3	17.7	29.5	30.0
6 HOUR	3.7	8.8	11.8	14.7	22.5	23.4
24 HOUR	0.5	3.5	5.2	6.8	14.5	13.6

The largest storm volume increase was experienced during the 10 year 24 hour storm event, where the anticipated run-off is increased by 2.7 acre feet from the natural condition. This increase is being mitigated by the proposed bio-retention / detention basin located on the southeast corner of the site.

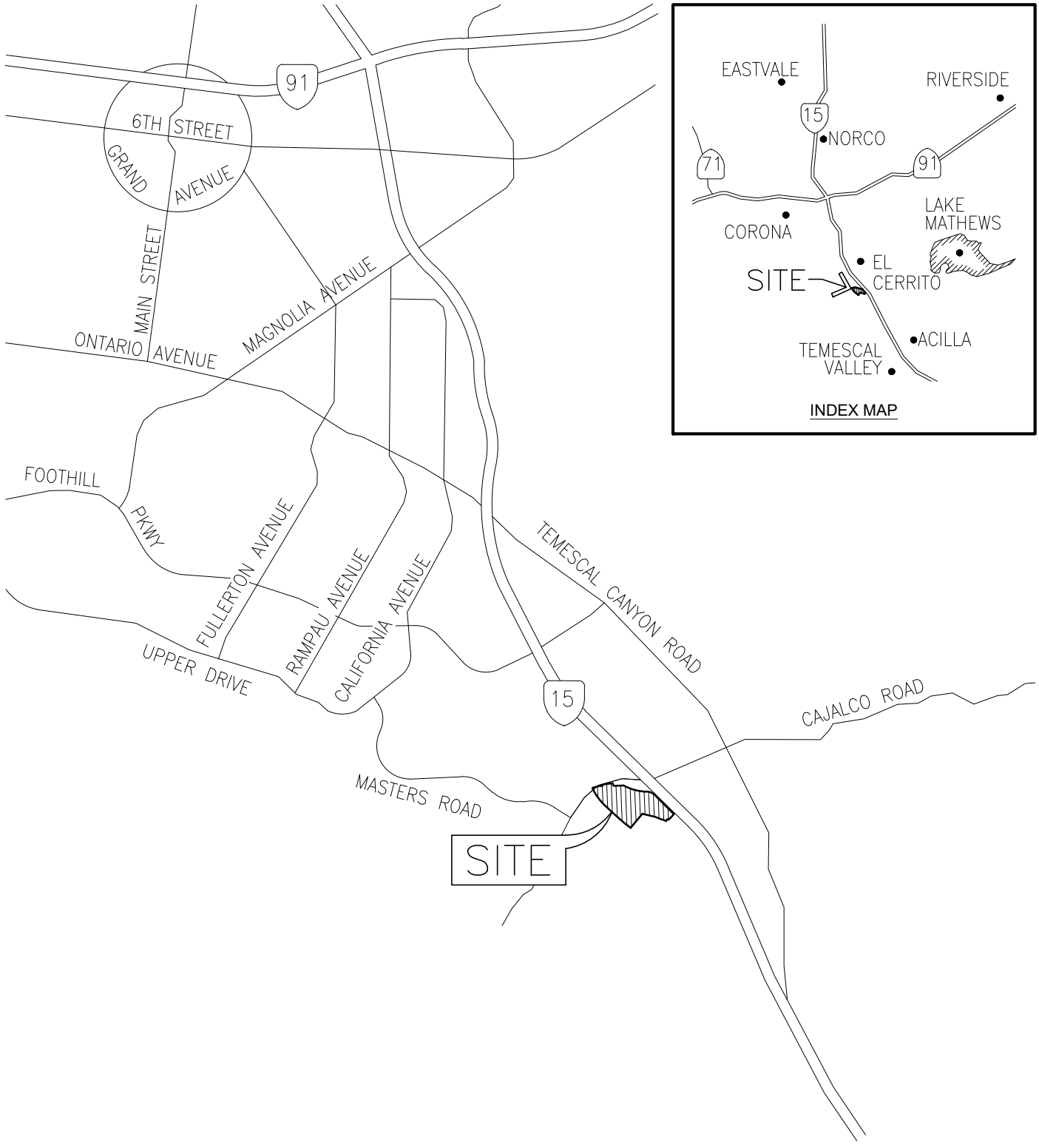
DMA 'B' - UNIT HYDROGRAPH – STORM VOLUME (ac-ft)						
	2 YEAR		10 YEAR		100 YEAR	
	EXISTING	DEVELOPED	EXISTING	DEVELOPED	EXISTING	DEVELOPED
1 HOUR	0.2	0.5	0.7	0.9	1.7	1.5
3 HOUR	0.2	0.9	0.9	1.5	2.5	2.5
6 HOUR	0.2	1.2	0.8	1.8	2.5	2.8
24 HOUR	0.3	2.1	1.4	4.1	6.0	7.4

Methodology

This hydrology report is to be used only to analyze flow to, through, and out of the site using the Riverside County Rational Method. In regard to pipe sizing, the hydrology programs were utilized only as a tool for obtaining preliminary sizing of the storm drain facilities by allowing the program to determine minimum pipe sizes. The actual storm drain system and pipe sizes shall be designed per Riverside County Flood Control District criteria during final engineering. Civil Design Version 7.0 Computer Software Program and AES Engineering Software 2011 version were used in generating the hydrological and hydraulic analysis for this report.

Conclusion

Based upon the results of this preliminary report, it is expected that drainage facilities discussed above will adequately protect the site area from flood damage associated with the 100-year storm event. The proposed facilities, with ultimate development and adequate maintenance, will convey flows safely through the site area in accordance with Riverside County requirements.



HUNSAKER & ASSOCIATES
IRVINE, INC
INLAND EMPIRE REGION
2900 ADAMS STREET, SUITE A-15
RIVERSIDE CA 92504 (951)352-7200
PLANNING/ENGINEERING/SURVEYING/GOVERNMENT RELATIONS

N
W HUNSAKER E
S

NOT TO SCALE

FIGURE 1: VICINITY MAP
T.T.M. 37788

H:\00539\Engineering\Hydrology\Commercial Site\Parts\Maps\00539-Vicinity-Fig-1.dwg



HUNSAKER & ASSOCIATES
IRVINE, INC
INLAND EMPIRE REGION
2900 ADAMS STREET, SUITE A-15
RIVERSIDE CA 92504 (951)352-7200
PLANNING/ENGINEERING/SURVEYING/GOVERNMENT RELATIONS

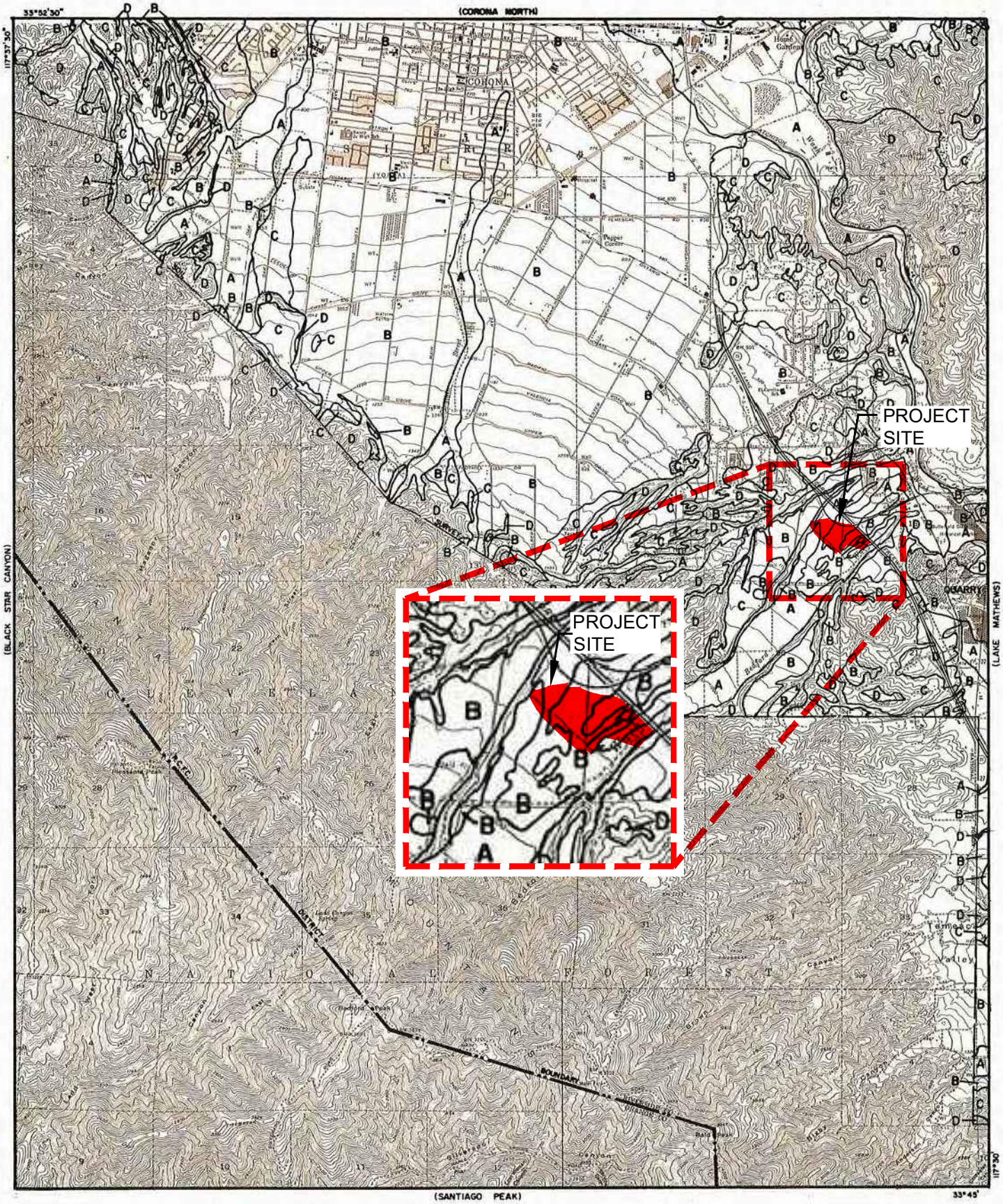
N
W HUNSAKER E
S

FIGURE 2: AERIAL PHOTOGRAPH
T.T.M. 37788

H:\00539\Engineering\Hydrology\Commercial Site\Parts\Maps\00539-Vicinity-Fig-2-Aerial.dwg

SECTION 2 - Riverside County Flood Control Data

- Soils Group Map
- Slope-Intensity Duration Curve
- Intensity Duration Curve



LEGEND

SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC&WCD

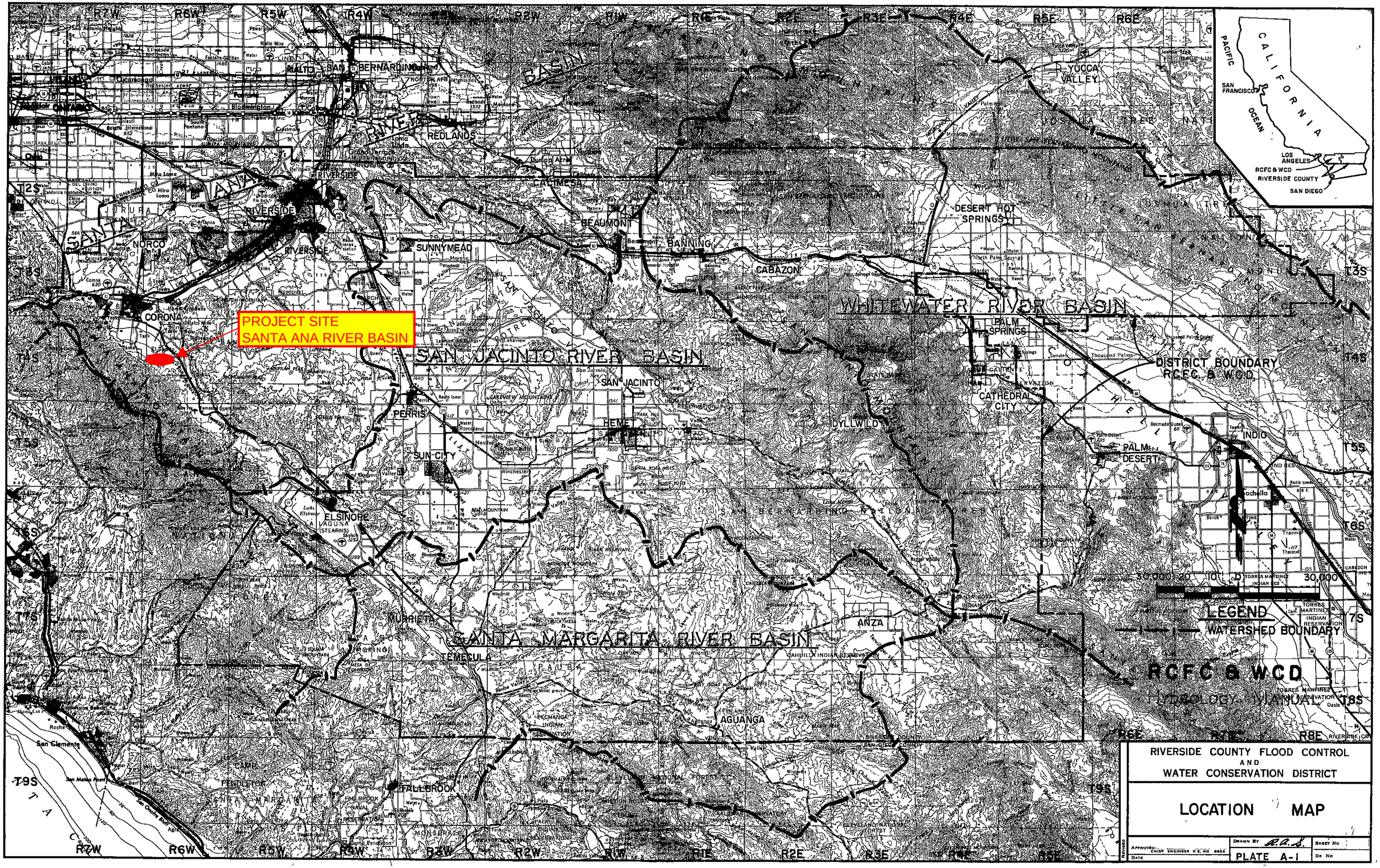
HYDROLOGY MANUAL

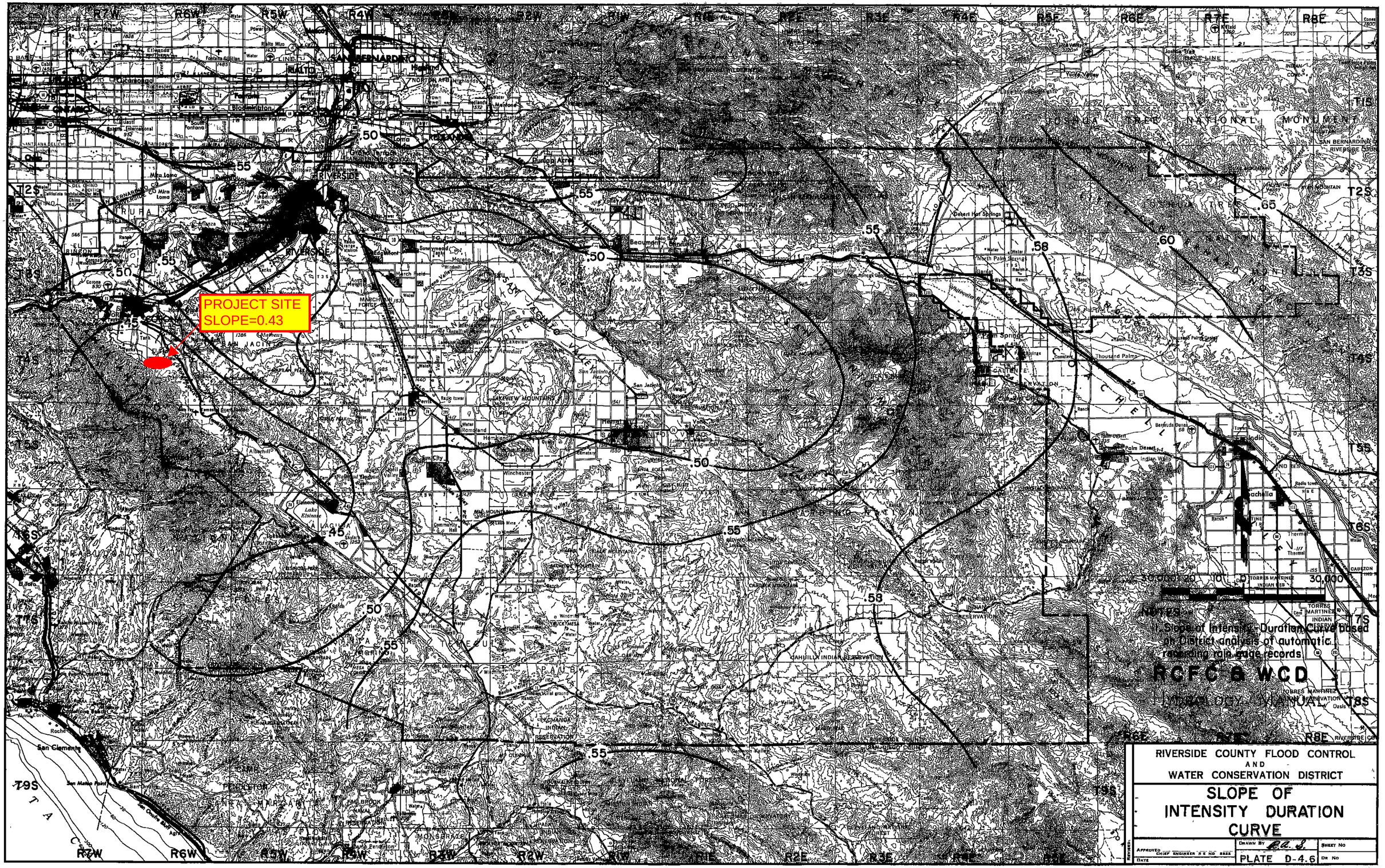
N

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR CORONA-SOUTH

PLATE C-1.27


PROJECT SITE
SANTA ANA RIVER BASIN
SANTA ANA RIVER BASIN
SAN JACINTO RIVER BASIN
WHITEWATER RIVER BASIN
SANTA MARGARITA RIVER BASIN
RIVERSIDE
SAN BERNARDINO
RIALTO
REDLANDS
YUCCA VALLEY
CALIMESA
BEAUMONT
BANNING
DESERT HOT SPRINGS
SUNNYMEAD
NORCO
CORONA
CABAZON
PALM SPRINGS
CATHEDRAL CITY
DYLLWILD
PERRIS
SAN JACINTO
HEMET
SUN CITY
INDIO
PALM DESERT
ELSINORE
MURRIETA
TEMECULA
ANZA
AGUANGA
FALLBROOK
San Clemente
DISTRICT BOUNDARY
RCFC & WCD
CALIFORNIA
PACIFIC OCEAN
SAN FRANCISCO
LOS ANGELES
RCFC & WCD
RIVERSIDE COUNTY
SAN DIEGO
30,000 20 10 0 30,000
LEGEND
WATERSHED BOUNDARY
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
LOCATION MAP
PLATE A-1


PROJECT SITE
SLOPE=0.43
SAN BERNARDINO
RIVERSIDE
JOSHUA TREE NATIONAL MONUMENT
SAN JACINTO MOUNTAINS
SAN GABRIEL MOUNTAINS
SAN JACINTO FAULT
SAN ANDREAS FAULT
SAN JACINTO VALLEY
COACHELLA VALLEY
SAN GORGONIO PASS
MORONGO VALLEY
MORENO VALLEY
PERRIS VALLEY
LAKEVIEW MOUNTAINS
SAN JACINTO PEAK
SAN GORGONIO MOUNTAIN
MARCH AIR FORCE BASE
NORTON AFB
Beaumont
Banning
Calimesa
Redlands
Loma Linda
Moreno Valley
Perris
Hemet
San Jacinto
Winchester
Lake Elsinore
Corona
Norco
Jurupa
Mira Loma
Ontario
Fontana
Rialto
Colton
San Bernardino
Highland
Yucaipa
Desert Hot Springs
North Palm Springs
Palm Springs
Cathedral City
Thousand Palms
Rancho Mirage
Palm Desert
Indian Wells
La Quinta
Indio
Coachella
Thermal
Mecca
Oasis
Torres Martinez Indian Reservation
Cabazon
Banning Indian Reservation
Cahuilla Indian Reservation
Morongo Indian Reservation
Agua Caliente Indian Reservation
Santa Rosa Indian Reservation
San Manuel Indian Reservation
Soboba Indian Reservation
Pechanga Indian Reservation
San Clemente
San Mateo Point
San Onofre Bluff
.45
.50
.55
.58
.60
.65
R7W
R6W
R5W
R4W
R3W
R2W
R1W
R1E
R2E
R3E
R4E
R5E
R6E
R7E
R8E
T2S
T3S
T4S
T5S
T6S
T7S
T8S
T9S
0 30,000 60,000 90,000 120,000 150,000 180,000 210,000 240,000 270,000 300,000 330,000 360,000
30,000
NOTES
1. Slope of Intensity-Duration Curve based on District analysis of automatic recording rain gage records
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
SLOPE OF INTENSITY DURATION CURVE
APPROVED CHIEF ENGINEER R.E. NO. 8824
DATE
DRAWN BY
SHEET NO
PLATE D-4.6
DR NO
REVISED

PROJECT SITE
INTENSITY = 0.55

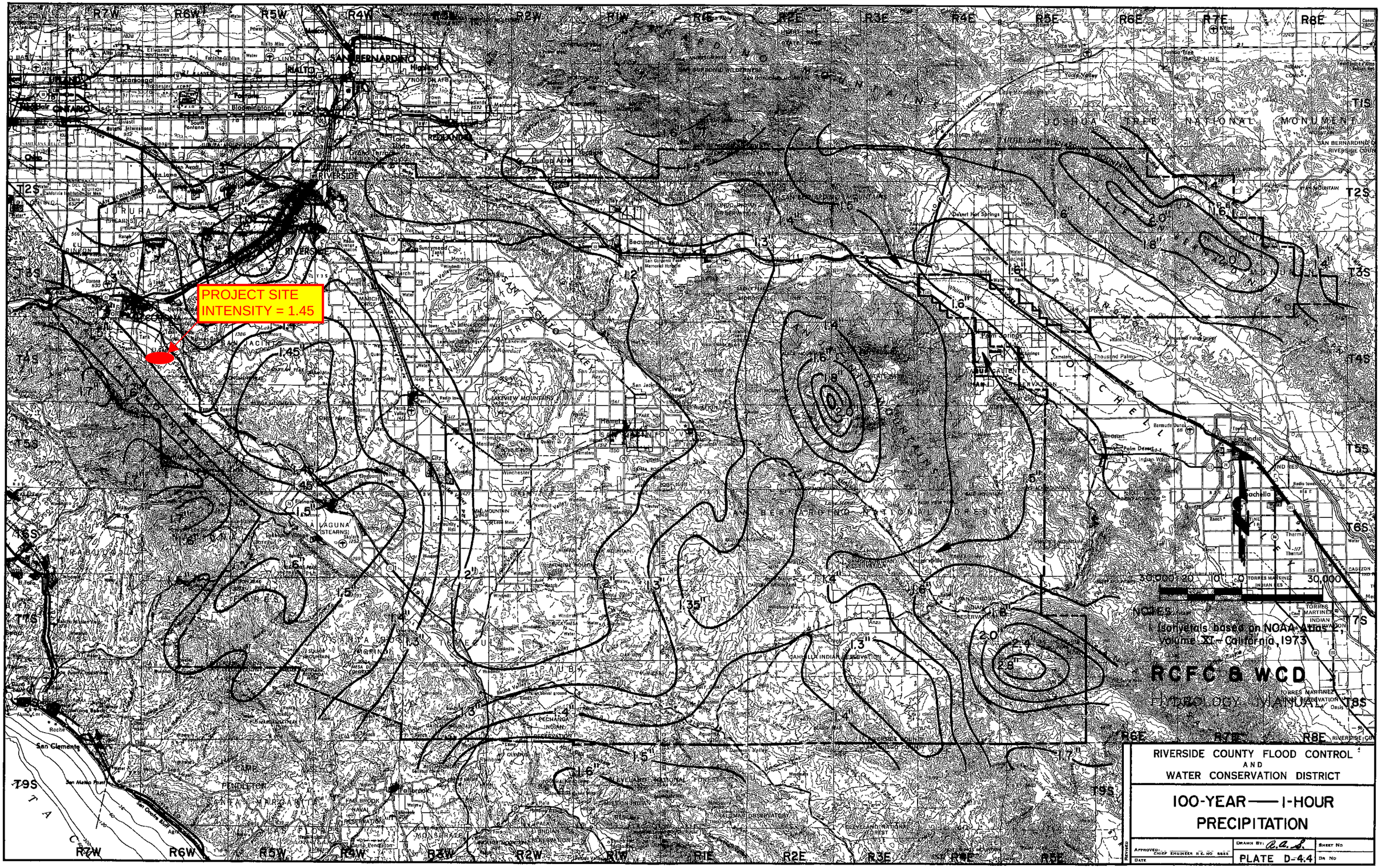
NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973

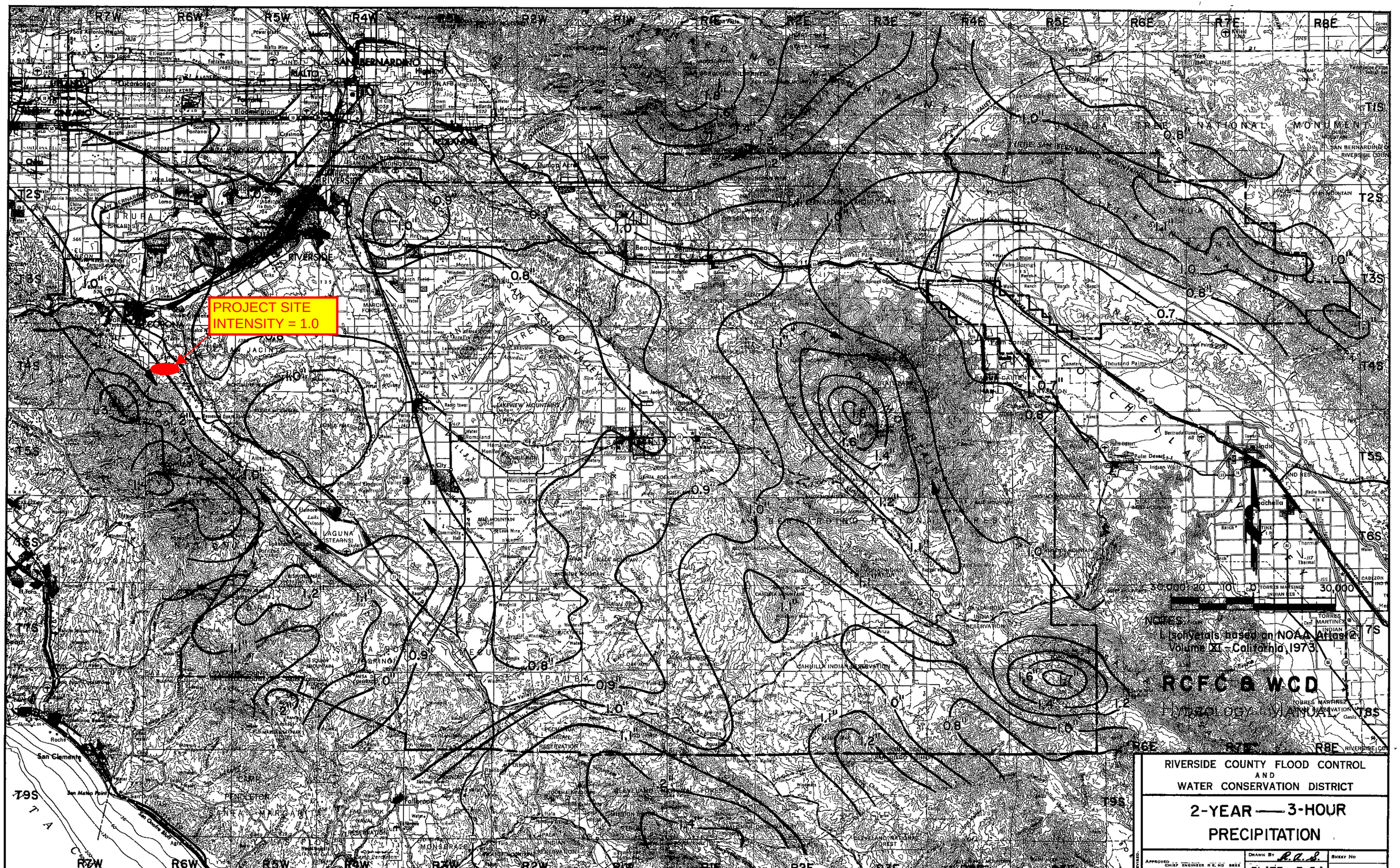
RCFC & WCD
HYDROLOGY MANUAL

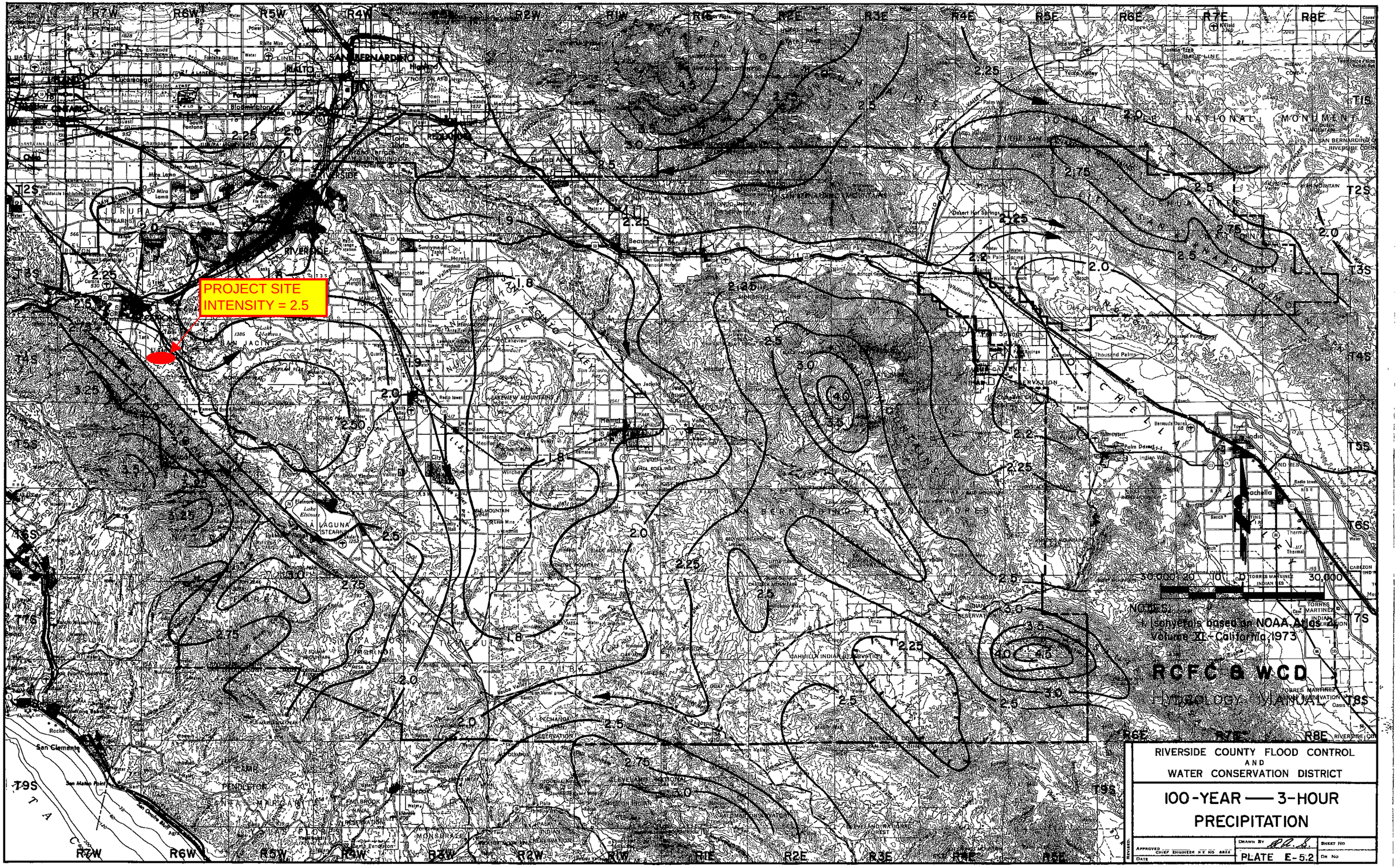
RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

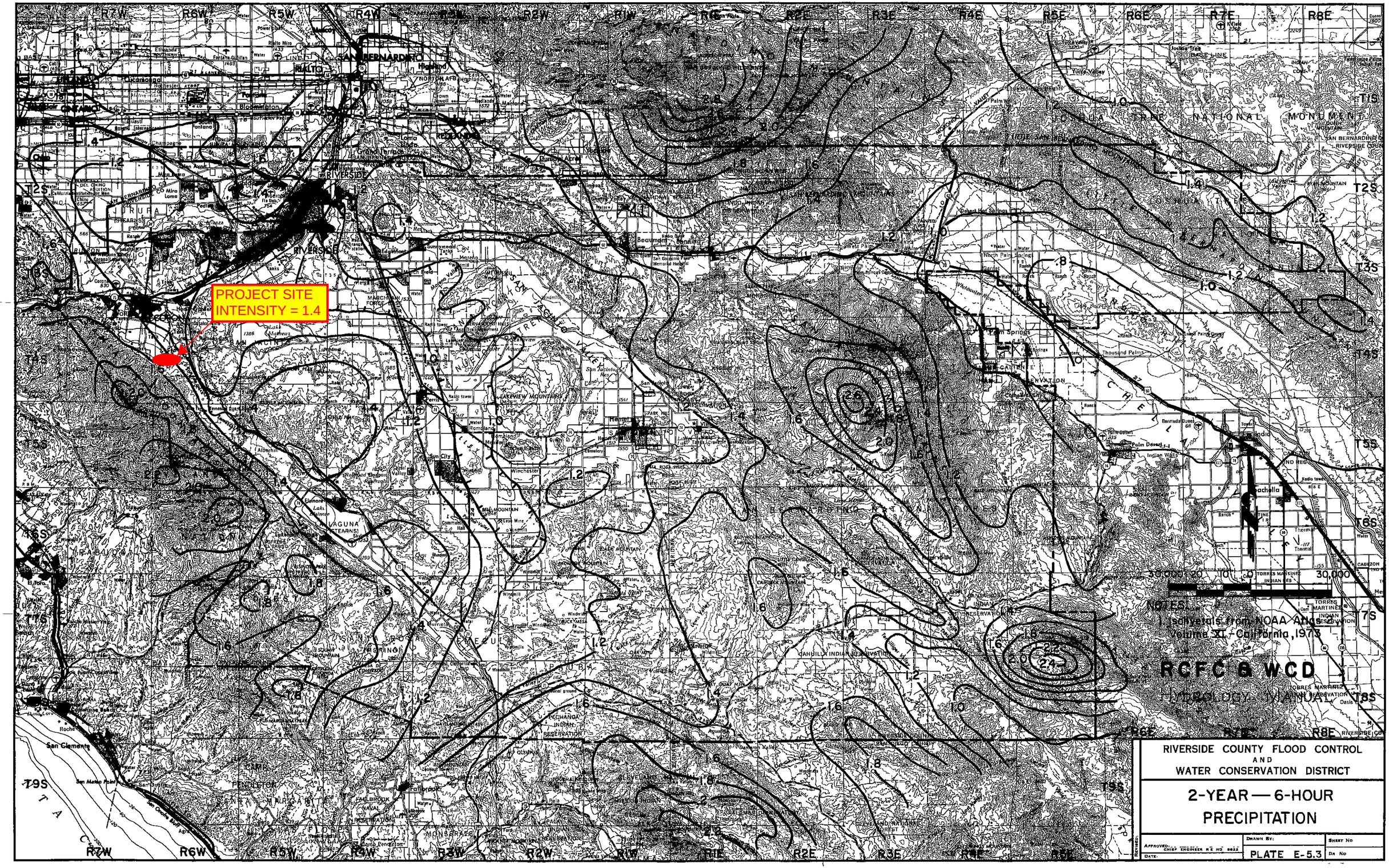
2-YEAR — 1-HOUR
PRECIPITATION

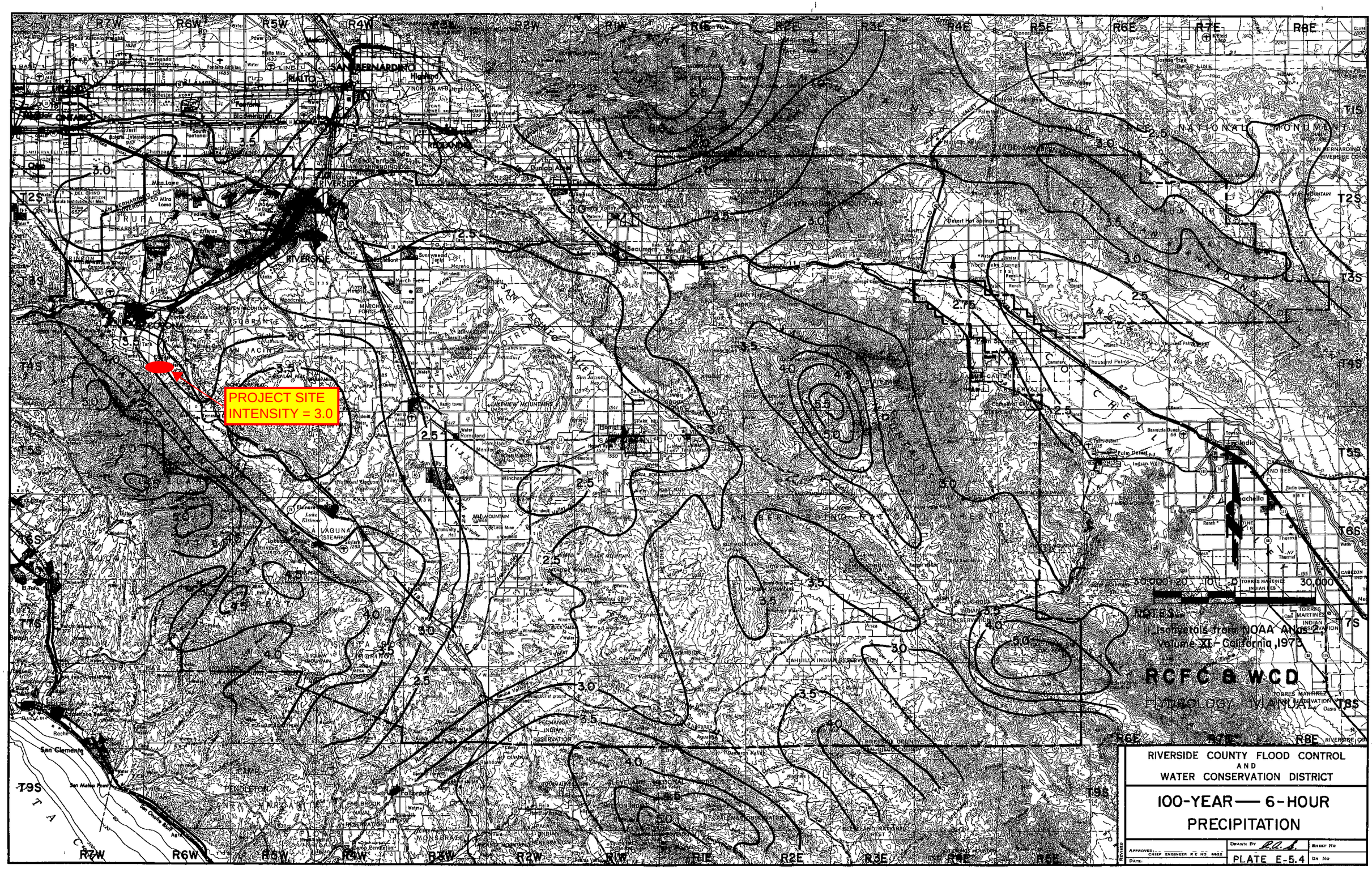
APPROVED _____ CHIEF ENGINEER R.E. NO. 8882
DATE _____
DRAWN BY R.A.S.
PLATE D-4.3
SHEET NO
DR NO

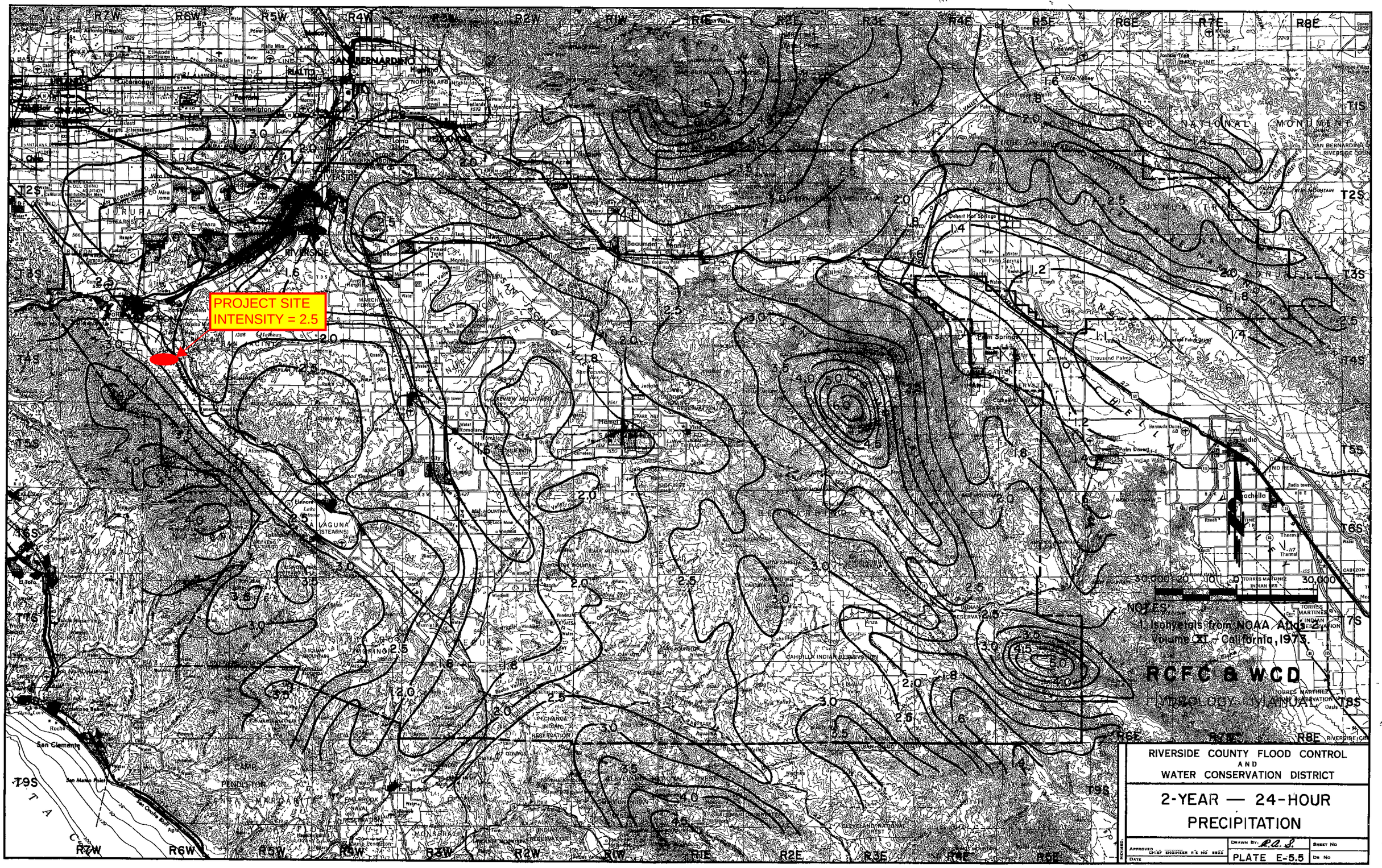

PROJECT SITE
INTENSITY = 1.45
NOTES
1. Isohyetals based on NOAA Atlas 2, volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 1-HOUR PRECIPITATION
DRAWN BY: A.A.S.
PLATE D-4.4
SHEET NO
DR NO
APPROVED
CHIEF ENGINEER R.C.F.C. & W.C.D.
DATE
REVISED


PROJECT SITE
INTENSITY = 1.0
Notes:
Isohyetals based on NOAA Atlas 2
Volume XI - California, 1973.
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
2-YEAR — 3-HOUR
PRECIPITATION
DRAWN BY R.A.S.
SHEET NO
PLATE E-5.1
DR NO
APPROVED CHIEF ENGINEER R.E. NO 6825
DATE
REVISED


PROJECT SITE
INTENSITY = 2.5
NOTES:
1. Isohyetals based on NOAA Atlas 2
Volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
100-YEAR — 3-HOUR
PRECIPITATION
PLATE E-5.2
SHEET NO
DR NO
DRAWN BY
APPROVED CHIEF ENGINEER R.E. NO. 8824
DATE
REVISED


PROJECT SITE
INTENSITY = 1.4
NOTES
1. Isohyetals from NOAA Atlas 2
Volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
2-YEAR — 6-HOUR
PRECIPITATION
DRAWN BY:
PLATE E-5.3
SHEET NO
DR NO
APPROVED CHIEF ENGINEER R.E. NO. 6822
DATE:
REVISED:


PROJECT SITE
INTENSITY = 3.0
Isohyetals from NOAA Atlas 2,
Volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
100-YEAR — 6-HOUR
PRECIPITATION
PLATE E-5.4


PROJECT SITE
INTENSITY = 2.5
SAN BERNARDINO
RIVERSIDE
RIALTO
NORTON AFB
MARCH AFB
SAN JACINTO MTS
SAN JACINTO RIVER
SANTA ANA RIVER
SANTA ANA MTS
SANTA ROSA MTS
SAN JACINTO MTS NATIONAL MONUMENT
Palm Springs
Desert Hot Springs
Beaumont
Banning
Yucaipa
Redlands
Loma Linda
Riverside
Corona
Norco
Jurupa
Chino
Ontario
Fontana
Rancho Cucamonga
Colton
Highland
San Bernardino
Mira Loma
Moreno Valley
Perris
Hemet
San Jacinto
Lake Elsinore
Canyon Lake
Sun City
Menifee
Murrieta
Temecula
Wildomar
Lake Mathews
Lake Perris
Vail Lake
Diamond Valley Lake
Lake Skinner
Lake Hemet
Lake Fulmor
Lake Cahuilla
Lake Elsinore
Railroad Canyon Reservoir
Lake Matth

PROJECT SITE
INTENSITY = 8.0

NOTES:
1. Isohyetals from NOAA Atlas 2, Volume XI - California, 1973.

RCFC & WCD
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

100-YEAR — 24-HOUR PRECIPITATION

APPROVED CHIEF ENGINEER R.E. NO. 8882	DRAWN BY	SHEET NO
DATE	PLATE E-5.6	DR NO

REVISED

SECTION 3 – Hydrology Calculations

- **Rational Hydrology Analysis**

Area A

- **Area 'A' – 2 Year Post-Development Condition – Rational Method**

```
                Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
        Rational Hydrology Study        Date: 07/16/19  File:PRA002.out
------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'A'
DEVELOPED CONDITION RATIONAL METHOD - 2 YEAR STORM
HUNSAKER & ASSOCIATES, JULY 16, 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 6407

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =    2.00 Antecedent Moisture Condition = 1

2 year, 1 hour precipitation =  0.550(In.)
100 year, 1 hour precipitation =  1.450(In.)

Storm event year =   2.0
Calculated rainfall intensity data:
1 hour intensity =  0.550(In/Hr)
Slope of intensity duration curve = 0.4300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      100.000 to Point/Station      101.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
Initial area flow distance =   386.000(Ft.)
Top (of initial area) elevation =   933.000(Ft.)
Bottom (of initial area) elevation =   929.700(Ft.)
Difference in elevation =     3.300(Ft.)
Slope =    0.00855  s(percent)=       0.85
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.421 min.
Rainfall intensity =      1.280(In/Hr) for a     2.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.838
Decimal fraction soil group A = 0.200
Decimal fraction soil group B = 0.800
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  31.96
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      2.391(CFS)
Total initial stream area =        2.230(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____________________________________________________________________________
Upstream point/station elevation =   923.000(Ft.)
Downstream point/station elevation =   921.000(Ft.)
Pipe length  =   260.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.391(CFS)
Nearest computed pipe diameter  =     12.00(In.)
```

```
Calculated individual pipe flow  =     2.391(CFS)
Normal flow depth in pipe =    7.86(In.)
Flow top width inside pipe =   11.41(In.)
Critical Depth =    7.94(In.)
Pipe flow velocity =      4.38(Ft/s)
Travel time through pipe =    0.99 min.
Time of concentration (TC) =     9.41 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      2.230(Ac.)
Runoff from this stream =      2.391(CFS)
Time of concentration =    9.41 min.
Rainfall intensity =     1.220(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
Initial area flow distance =   283.000(Ft.)
Top (of initial area) elevation =   929.500(Ft.)
Bottom (of initial area) elevation =   927.200(Ft.)
Difference in elevation =     2.300(Ft.)
Slope =    0.00813  s(percent)=       0.81
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.514 min.
Rainfall intensity =      1.344(In/Hr) for a     2.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.829
Decimal fraction soil group A = 0.700
Decimal fraction soil group B = 0.300
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  21.36
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      2.240(CFS)
Total initial stream area =        2.010(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      102.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   921.200(Ft.)
Downstream point/station elevation =   921.000(Ft.)
Pipe length  =    10.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.240(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     2.240(CFS)
Normal flow depth in pipe =    7.05(In.)
Flow top width inside pipe =    7.41(In.)
Critical Depth =    8.04(In.)
Pipe flow velocity =      6.03(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     7.54 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      102.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      2.010(Ac.)
Runoff from this stream =      2.240(CFS)
Time of concentration =    7.54 min.
Rainfall intensity =     1.342(In/Hr)
Summary of stream data:
```

```
Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        2.391      9.41                1.220
2        2.240      7.54                1.342
Largest stream flow has longer time of concentration
Qp =      2.391 + sum of
          Qb         Ia/Ib
           2.240 *    0.909 =      2.037
Qp =      4.428

Total of 2 streams to confluence:
Flow rates before confluence point:
       2.391       2.240
Area of streams before confluence:
        2.230        2.010
Results of confluence:
Total flow rate =      4.428(CFS)
Time of concentration =     9.410 min.
Effective stream area after confluence =      4.240(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      105.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =   921.000(Ft.)
Downstream point/station elevation =   918.500(Ft.)
Pipe length  =   382.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.428(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     4.428(CFS)
Normal flow depth in pipe =   10.59(In.)
Flow top width inside pipe =   13.66(In.)
Critical Depth =   10.23(In.)
Pipe flow velocity =      4.78(Ft/s)
Travel time through pipe =    1.33 min.
Time of concentration (TC) =    10.74 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      105.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      4.240(Ac.)
Runoff from this stream =      4.428(CFS)
Time of concentration =   10.74 min.
Rainfall intensity =     1.152(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      107.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
Initial area flow distance =   437.000(Ft.)
Top (of initial area) elevation =   926.800(Ft.)
Bottom (of initial area) elevation =   924.700(Ft.)
Difference in elevation =     2.100(Ft.)
Slope =    0.00481  s(percent)=       0.48
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.930 min.
Rainfall intensity =      1.192(In/Hr) for a     2.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.823
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  16.20
Pervious area fraction =  0.100; Impervious fraction =  0.900
```

```
Initial subarea runoff =      3.062(CFS)
Total initial stream area =        3.120(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      105.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =   918.700(Ft.)
Downstream point/station elevation =   918.500(Ft.)
Pipe length  =    10.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.062(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     3.062(CFS)
Normal flow depth in pipe =    6.75(In.)
Flow top width inside pipe =   11.91(In.)
Critical Depth =    9.00(In.)
Pipe flow velocity =      6.72(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     9.96 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      105.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.120(Ac.)
Runoff from this stream =      3.062(CFS)
Time of concentration =    9.96 min.
Rainfall intensity =     1.191(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        4.428     10.74                1.152
2        3.062      9.96                1.191
Largest stream flow has longer time of concentration
Qp =      4.428 + sum of
          Qb         Ia/Ib
           3.062 *    0.968 =      2.963
Qp =      7.391

Total of 2 streams to confluence:
Flow rates before confluence point:
       4.428       3.062
Area of streams before confluence:
        4.240        3.120
Results of confluence:
Total flow rate =      7.391(CFS)
Time of concentration =    10.742 min.
Effective stream area after confluence =      7.360(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =   918.500(Ft.)
Downstream point/station elevation =   915.000(Ft.)
Pipe length  =   307.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.391(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     7.391(CFS)
Normal flow depth in pipe =   10.66(In.)
Flow top width inside pipe =   17.69(In.)
Critical Depth =   12.64(In.)
Pipe flow velocity =      6.78(Ft/s)
Travel time through pipe =    0.75 min.
Time of concentration (TC) =    11.50 min.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      108.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.360(Ac.)
Runoff from this stream =      7.391(CFS)
Time of concentration =   11.50 min.
Rainfall intensity =     1.119(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      110.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
Initial area flow distance =   360.000(Ft.)
Top (of initial area) elevation =   923.100(Ft.)
Bottom (of initial area) elevation =   921.500(Ft.)
Difference in elevation =     1.600(Ft.)
Slope =    0.00444  s(percent)=       0.44
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.334 min.
Rainfall intensity =      1.224(In/Hr) for a     2.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.831
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  25.20
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      2.330(CFS)
Total initial stream area =        2.290(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =   915.500(Ft.)
Downstream point/station elevation =   915.000(Ft.)
Pipe length  =    22.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.330(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     2.330(CFS)
Normal flow depth in pipe =    6.89(In.)
Flow top width inside pipe =    7.62(In.)
Critical Depth =    8.14(In.)
Pipe flow velocity =      6.41(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     9.39 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      108.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      2.290(Ac.)
Runoff from this stream =      2.330(CFS)
Time of concentration =    9.39 min.
Rainfall intensity =     1.221(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        7.391     11.50                1.119
2        2.330      9.39                1.221
```

```
Largest stream flow has longer time of concentration
Qp =      7.391 + sum of
          Qb          Ia/Ib
           2.330 *    0.917 =      2.136
Qp =      9.527

Total of 2 streams to confluence:
Flow rates before confluence point:
       7.391       2.330
Area of streams before confluence:
        7.360        2.290
Results of confluence:
Total flow rate =      9.527(CFS)
Time of concentration =    11.497 min.
Effective stream area after confluence =      9.650(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      111.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =   915.000(Ft.)
Downstream point/station elevation =   913.500(Ft.)
Pipe length  =   195.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.527(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     9.527(CFS)
Normal flow depth in pipe =   12.77(In.)
Flow top width inside pipe =   20.50(In.)
Critical Depth =   13.78(In.)
Pipe flow velocity =      6.22(Ft/s)
Travel time through pipe =    0.52 min.
Time of concentration (TC) =    12.02 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      112.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =   913.500(Ft.)
Downstream point/station elevation =   908.400(Ft.)
Pipe length  =    62.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.527(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     9.527(CFS)
Normal flow depth in pipe =    9.18(In.)
Flow top width inside pipe =   10.18(In.)
Critical depth could not be calculated.
Pipe flow velocity =     14.78(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =    12.09 min.
End of computations, total study area =            9.65 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  40.8
```

- **Area 'A' – 10 Year Post-Development Condition – Rational Method**

```
                Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
        Rational Hydrology Study        Date: 07/16/19  File:pra010.out
------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'A'
DEVELOPED CONDITION RATIONAL METHOD - 10 YEAR STORM
HUNSAKER & ASSOCIATES, JULY 16, 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 6407

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

2 year, 1 hour precipitation =  0.550(In.)
100 year, 1 hour precipitation =  1.450(In.)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.920(In/Hr)
Slope of intensity duration curve = 0.4300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      100.000 to Point/Station      101.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
Initial area flow distance =   386.000(Ft.)
Top (of initial area) elevation =   933.000(Ft.)
Bottom (of initial area) elevation =   929.700(Ft.)
Difference in elevation =     3.300(Ft.)
Slope =    0.00855  s(percent)=       0.85
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.421 min.
Rainfall intensity =      2.141(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.866
Decimal fraction soil group A = 0.200
Decimal fraction soil group B = 0.800
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  51.20
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      4.137(CFS)
Total initial stream area =        2.230(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____________________________________________________________________________
Upstream point/station elevation =   923.000(Ft.)
Downstream point/station elevation =   921.000(Ft.)
Pipe length  =   260.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.137(CFS)
Nearest computed pipe diameter  =     15.00(In.)
```

```
Calculated individual pipe flow  =     4.137(CFS)
Normal flow depth in pipe =    9.52(In.)
Flow top width inside pipe =   14.45(In.)
Critical Depth =    9.88(In.)
Pipe flow velocity =      5.04(Ft/s)
Travel time through pipe =    0.86 min.
Time of concentration (TC) =     9.28 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      2.230(Ac.)
Runoff from this stream =      4.137(CFS)
Time of concentration =    9.28 min.
Rainfall intensity =     2.053(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
Initial area flow distance =   283.000(Ft.)
Top (of initial area) elevation =   929.500(Ft.)
Bottom (of initial area) elevation =   927.200(Ft.)
Difference in elevation =     2.300(Ft.)
Slope =    0.00813  s(percent)=       0.81
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.514 min.
Rainfall intensity =      2.249(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.857
Decimal fraction soil group A = 0.700
Decimal fraction soil group B = 0.300
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  39.20
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      3.873(CFS)
Total initial stream area =        2.010(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      102.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   921.200(Ft.)
Downstream point/station elevation =   921.000(Ft.)
Pipe length  =    10.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.873(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     3.873(CFS)
Normal flow depth in pipe =    7.89(In.)
Flow top width inside pipe =   11.39(In.)
Critical Depth =   10.03(In.)
Pipe flow velocity =      7.07(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     7.54 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      102.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      2.010(Ac.)
Runoff from this stream =      3.873(CFS)
Time of concentration =    7.54 min.
Rainfall intensity =     2.246(In/Hr)
Summary of stream data:
```

```
Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        4.137      9.28                2.053
2        3.873      7.54                2.246
Largest stream flow has longer time of concentration
Qp =      4.137 + sum of
          Qb         Ia/Ib
           3.873 *    0.914 =      3.541
Qp =      7.678

Total of 2 streams to confluence:
Flow rates before confluence point:
       4.137       3.873
Area of streams before confluence:
        2.230        2.010
Results of confluence:
Total flow rate =      7.678(CFS)
Time of concentration =     9.281 min.
Effective stream area after confluence =      4.240(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      105.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =   921.000(Ft.)
Downstream point/station elevation =   918.500(Ft.)
Pipe length  =   382.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.678(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     7.678(CFS)
Normal flow depth in pipe =   13.39(In.)
Flow top width inside pipe =   15.71(In.)
Critical Depth =   12.88(In.)
Pipe flow velocity =      5.44(Ft/s)
Travel time through pipe =    1.17 min.
Time of concentration (TC) =    10.45 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      105.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      4.240(Ac.)
Runoff from this stream =      7.678(CFS)
Time of concentration =   10.45 min.
Rainfall intensity =     1.951(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      107.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------
Initial area flow distance =   437.000(Ft.)
Top (of initial area) elevation =   926.800(Ft.)
Bottom (of initial area) elevation =   924.700(Ft.)
Difference in elevation =     2.100(Ft.)
Slope =    0.00481  s(percent)=       0.48
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.930 min.
Rainfall intensity =      1.994(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.847
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  32.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
```

```
Initial subarea runoff =      5.272(CFS)
Total initial stream area =        3.120(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      105.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =   918.700(Ft.)
Downstream point/station elevation =   918.500(Ft.)
Pipe length  =    10.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.272(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     5.272(CFS)
Normal flow depth in pipe =    8.18(In.)
Flow top width inside pipe =   14.94(In.)
Critical Depth =   11.17(In.)
Pipe flow velocity =      7.71(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     9.95 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      105.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.120(Ac.)
Runoff from this stream =      5.272(CFS)
Time of concentration =    9.95 min.
Rainfall intensity =     1.993(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        7.678     10.45                1.951
2        5.272      9.95                1.993
Largest stream flow has longer time of concentration
Qp =      7.678 + sum of
          Qb         Ia/Ib
           5.272 *    0.979 =      5.162
Qp =     12.840

Total of 2 streams to confluence:
Flow rates before confluence point:
       7.678       5.272
Area of streams before confluence:
        4.240        3.120
Results of confluence:
Total flow rate =     12.840(CFS)
Time of concentration =    10.450 min.
Effective stream area after confluence =      7.360(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =   918.500(Ft.)
Downstream point/station elevation =   915.000(Ft.)
Pipe length  =   307.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.840(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    12.840(CFS)
Normal flow depth in pipe =   13.69(In.)
Flow top width inside pipe =   20.01(In.)
Critical Depth =   16.01(In.)
Pipe flow velocity =      7.74(Ft/s)
Travel time through pipe =    0.66 min.
Time of concentration (TC) =    11.11 min.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      108.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.360(Ac.)
Runoff from this stream =     12.840(CFS)
Time of concentration =   11.11 min.
Rainfall intensity =     1.900(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      110.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
Initial area flow distance =   360.000(Ft.)
Top (of initial area) elevation =   923.100(Ft.)
Bottom (of initial area) elevation =   921.500(Ft.)
Difference in elevation =     1.600(Ft.)
Slope =    0.00444  s(percent)=       0.44
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.334 min.
Rainfall intensity =      2.048(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.859
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  44.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      4.030(CFS)
Total initial stream area =        2.290(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =   915.500(Ft.)
Downstream point/station elevation =   915.000(Ft.)
Pipe length  =    22.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.030(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     4.030(CFS)
Normal flow depth in pipe =    7.76(In.)
Flow top width inside pipe =   11.47(In.)
Critical Depth =   10.20(In.)
Pipe flow velocity =      7.51(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =     9.38 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      108.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      2.290(Ac.)
Runoff from this stream =      4.030(CFS)
Time of concentration =    9.38 min.
Rainfall intensity =     2.044(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       12.840     11.11                1.900
2        4.030      9.38                2.044
```

```
Largest stream flow has longer time of concentration
Qp =     12.840 + sum of
          Qb          Ia/Ib
           4.030 *    0.930 =      3.748
Qp =     16.588

Total of 2 streams to confluence:
Flow rates before confluence point:
      12.840       4.030
Area of streams before confluence:
        7.360        2.290
Results of confluence:
Total flow rate =     16.588(CFS)
Time of concentration =    11.112 min.
Effective stream area after confluence =      9.650(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      111.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   915.000(Ft.)
Downstream point/station elevation =   913.500(Ft.)
Pipe length  =   195.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    16.588(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    16.588(CFS)
Normal flow depth in pipe =   16.78(In.)
Flow top width inside pipe =   22.01(In.)
Critical Depth =   17.61(In.)
Pipe flow velocity =      7.07(Ft/s)
Travel time through pipe =    0.46 min.
Time of concentration (TC) =    11.57 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      112.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   913.500(Ft.)
Downstream point/station elevation =   908.400(Ft.)
Pipe length  =    62.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    16.588(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    16.588(CFS)
Normal flow depth in pipe =   11.09(In.)
Flow top width inside pipe =   13.17(In.)
Critical depth could not be calculated.
Pipe flow velocity =     17.08(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =    11.63 min.
End of computations, total study area =            9.65 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  40.8
```

- **Area 'A' – 100 Year Post-Development Condition – Rational Method**

```
                Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
        Rational Hydrology Study        Date: 07/16/19  File:pra100.out
------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'A'
DEVELOPED CONDITION RATIONAL METHOD - 100 YEAR STORM
HUNSAKER & ASSOCIATES, JULY 16, 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 6407

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 3

2 year, 1 hour precipitation =  0.550(In.)
100 year, 1 hour precipitation =  1.450(In.)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.450(In/Hr)
Slope of intensity duration curve = 0.4300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      100.000 to Point/Station      101.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
Initial area flow distance =   386.000(Ft.)
Top (of initial area) elevation =   933.000(Ft.)
Bottom (of initial area) elevation =   929.700(Ft.)
Difference in elevation =     3.300(Ft.)
Slope =    0.00855  s(percent)=       0.85
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.421 min.
Rainfall intensity =      3.373(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.887
Decimal fraction soil group A = 0.200
Decimal fraction soil group B = 0.800
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  70.96
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      6.676(CFS)
Total initial stream area =        2.230(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____________________________________________________________________________
Upstream point/station elevation =   923.000(Ft.)
Downstream point/station elevation =   921.000(Ft.)
Pipe length  =   260.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.676(CFS)
Nearest computed pipe diameter  =     18.00(In.)
```

```
Calculated individual pipe flow  =     6.676(CFS)
Normal flow depth in pipe =   11.36(In.)
Flow top width inside pipe =   17.37(In.)
Critical Depth =   12.00(In.)
Pipe flow velocity =      5.68(Ft/s)
Travel time through pipe =    0.76 min.
Time of concentration (TC) =     9.18 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      2.230(Ac.)
Runoff from this stream =      6.676(CFS)
Time of concentration =    9.18 min.
Rainfall intensity =     3.250(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
Initial area flow distance =   283.000(Ft.)
Top (of initial area) elevation =   929.500(Ft.)
Bottom (of initial area) elevation =   927.200(Ft.)
Difference in elevation =     2.300(Ft.)
Slope =    0.00813  s(percent)=       0.81
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.514 min.
Rainfall intensity =      3.543(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.881
Decimal fraction soil group A = 0.700
Decimal fraction soil group B = 0.300
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  59.20
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      6.277(CFS)
Total initial stream area =        2.010(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      102.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   921.200(Ft.)
Downstream point/station elevation =   921.000(Ft.)
Pipe length  =    10.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.277(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     6.277(CFS)
Normal flow depth in pipe =    9.13(In.)
Flow top width inside pipe =   14.64(In.)
Critical Depth =   12.13(In.)
Pipe flow velocity =      8.02(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     7.53 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      102.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      2.010(Ac.)
Runoff from this stream =      6.277(CFS)
Time of concentration =    7.53 min.
Rainfall intensity =     3.539(In/Hr)
Summary of stream data:
```

```
Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        6.676      9.18                 3.250
2        6.277      7.53                 3.539
Largest stream flow has longer time of concentration
Qp =      6.676 + sum of
          Qb         Ia/Ib
           6.277 *    0.918 =      5.765
Qp =     12.441

Total of 2 streams to confluence:
Flow rates before confluence point:
       6.676       6.277
Area of streams before confluence:
        2.230        2.010
Results of confluence:
Total flow rate =     12.441(CFS)
Time of concentration =     9.184 min.
Effective stream area after confluence =      4.240(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      105.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =   921.000(Ft.)
Downstream point/station elevation =   918.500(Ft.)
Pipe length  =   382.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.441(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    12.441(CFS)
Normal flow depth in pipe =   16.69(In.)
Flow top width inside pipe =   16.97(In.)
Critical Depth =   15.77(In.)
Pipe flow velocity =      6.07(Ft/s)
Travel time through pipe =    1.05 min.
Time of concentration (TC) =    10.23 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      105.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      4.240(Ac.)
Runoff from this stream =     12.441(CFS)
Time of concentration =   10.23 min.
Rainfall intensity =     3.102(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      107.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------
Initial area flow distance =   437.000(Ft.)
Top (of initial area) elevation =   926.800(Ft.)
Bottom (of initial area) elevation =   924.700(Ft.)
Difference in elevation =     2.100(Ft.)
Slope =    0.00481  s(percent)=       0.48
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.930 min.
Rainfall intensity =      3.143(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.875
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  52.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
```

```
Initial subarea runoff =      8.576(CFS)
Total initial stream area =        3.120(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      105.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =   918.700(Ft.)
Downstream point/station elevation =   918.500(Ft.)
Pipe length  =    10.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.576(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     8.576(CFS)
Normal flow depth in pipe =   11.54(In.)
Flow top width inside pipe =   12.63(In.)
Critical Depth =   13.68(In.)
Pipe flow velocity =      8.46(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     9.95 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      105.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.120(Ac.)
Runoff from this stream =      8.576(CFS)
Time of concentration =    9.95 min.
Rainfall intensity =     3.140(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       12.441     10.23                3.102
2        8.576      9.95                3.140
Largest stream flow has longer time of concentration
Qp =     12.441 + sum of
          Qb         Ia/Ib
           8.576 *    0.988 =      8.473
Qp =     20.914

Total of 2 streams to confluence:
Flow rates before confluence point:
      12.441       8.576
Area of streams before confluence:
        4.240        3.120
Results of confluence:
Total flow rate =     20.914(CFS)
Time of concentration =    10.232 min.
Effective stream area after confluence =      7.360(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =   918.500(Ft.)
Downstream point/station elevation =   915.000(Ft.)
Pipe length  =   307.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    20.914(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    20.914(CFS)
Normal flow depth in pipe =   17.25(In.)
Flow top width inside pipe =   21.58(In.)
Critical Depth =   19.67(In.)
Pipe flow velocity =      8.66(Ft/s)
Travel time through pipe =    0.59 min.
Time of concentration (TC) =    10.82 min.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      108.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.360(Ac.)
Runoff from this stream =     20.914(CFS)
Time of concentration =   10.82 min.
Rainfall intensity =     3.028(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      110.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
Initial area flow distance =   360.000(Ft.)
Top (of initial area) elevation =   923.100(Ft.)
Bottom (of initial area) elevation =   921.500(Ft.)
Difference in elevation =     1.600(Ft.)
Slope =    0.00444  s(percent)=       0.44
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.334 min.
Rainfall intensity =      3.227(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.883
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  64.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      6.526(CFS)
Total initial stream area =        2.290(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =   915.500(Ft.)
Downstream point/station elevation =   915.000(Ft.)
Pipe length  =    22.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.526(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     6.526(CFS)
Normal flow depth in pipe =    8.99(In.)
Flow top width inside pipe =   14.70(In.)
Critical Depth =   12.34(In.)
Pipe flow velocity =      8.51(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     9.38 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      108.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      2.290(Ac.)
Runoff from this stream =      6.526(CFS)
Time of concentration =    9.38 min.
Rainfall intensity =     3.221(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       20.914     10.82                3.028
2        6.526      9.38                3.221
```

```
Largest stream flow has longer time of concentration
Qp =     20.914 + sum of
          Qb          Ia/Ib
           6.526 *    0.940 =      6.136
Qp =     27.050

Total of 2 streams to confluence:
Flow rates before confluence point:
      20.914       6.526
Area of streams before confluence:
        7.360        2.290
Results of confluence:
Total flow rate =     27.050(CFS)
Time of concentration =    10.823 min.
Effective stream area after confluence =      9.650(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      111.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   915.000(Ft.)
Downstream point/station elevation =   913.500(Ft.)
Pipe length  =   195.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    27.050(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    27.050(CFS)
Normal flow depth in pipe =   22.03(In.)
Flow top width inside pipe =   20.93(In.)
Critical Depth =   21.75(In.)
Pipe flow velocity =      7.79(Ft/s)
Travel time through pipe =    0.42 min.
Time of concentration (TC) =    11.24 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      112.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   913.500(Ft.)
Downstream point/station elevation =   908.400(Ft.)
Pipe length  =    62.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    27.050(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    27.050(CFS)
Normal flow depth in pipe =   13.31(In.)
Flow top width inside pipe =   15.80(In.)
Critical depth could not be calculated.
Pipe flow velocity =     19.29(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =    11.29 min.
End of computations, total study area =            9.65 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  40.8
```

Area B

- **Area 'B' – 2 Year Pre-Development Condition – Rational Method**

```
                Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
        Rational Hydrology Study        Date: 07/17/19  File:EXB002.out
------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
EXISTING CONDITION RATIONAL METHOD - 2 YEAR STORM
HUNSAKER & ASSOCIATES, JULY 16, 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 6407

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =    2.00 Antecedent Moisture Condition = 1

2 year, 1 hour precipitation =  0.550(In.)
100 year, 1 hour precipitation =  1.450(In.)

Storm event year =   2.0
Calculated rainfall intensity data:
1 hour intensity =  0.550(In/Hr)
Slope of intensity duration curve = 0.4300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      200.000 to Point/Station      201.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
Initial area flow distance =   850.000(Ft.)
Top (of initial area) elevation =   940.000(Ft.)
Bottom (of initial area) elevation =   905.000(Ft.)
Difference in elevation =    35.000(Ft.)
Slope =    0.04118  s(percent)=       4.12
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   14.898 min.
Rainfall intensity =      1.001(In/Hr) for a     2.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.381
Decimal fraction soil group A = 0.850
Decimal fraction soil group B = 0.150
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  49.38
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      2.107(CFS)
Total initial stream area =        5.530(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
____________________________________________________________________________
Top of natural channel elevation =    905.000(Ft.)
End of natural channel elevation =    895.000(Ft.)
Length of natural channel  =  1091.000(Ft.)
Estimated mean flow rate at midpoint of channel =      3.888(CFS)
```

```
Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   1.91(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0092
Corrected/adjusted channel slope =  0.0092
Travel time =    9.54 min.     TC =   24.44  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.363
Decimal fraction soil group A = 0.600
Decimal fraction soil group B = 0.400
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  52.68
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      0.809(In/Hr) for a     2.0 year storm
Subarea runoff =      2.746(CFS) for      9.350(Ac.)
Total runoff =      4.853(CFS)       Total area =      14.880(Ac.)
End of computations, total study area =           14.88 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  70.4
```

- **Area 'B' – 10 Year Pre-Development Condition – Rational Method**

```
                Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
        Rational Hydrology Study        Date: 07/17/19  File:EXB010.out
------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
EXISTING CONDITION RATIONAL METHOD - 10 YEAR STORM
HUNSAKER & ASSOCIATES, JULY 16, 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 6407

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

2 year, 1 hour precipitation =  0.550(In.)
100 year, 1 hour precipitation =  1.450(In.)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.920(In/Hr)
Slope of intensity duration curve = 0.4300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      200.000 to Point/Station      201.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
Initial area flow distance =   850.000(Ft.)
Top (of initial area) elevation =   940.000(Ft.)
Bottom (of initial area) elevation =   905.000(Ft.)
Difference in elevation =    35.000(Ft.)
Slope =    0.04118  s(percent)=       4.12
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   14.898 min.
Rainfall intensity =      1.675(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.660
Decimal fraction soil group A = 0.850
Decimal fraction soil group B = 0.150
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  68.65
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      6.115(CFS)
Total initial stream area =        5.530(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
____________________________________________________________________________
Top of natural channel elevation =    905.000(Ft.)
End of natural channel elevation =    895.000(Ft.)
Length of natural channel  =  1091.000(Ft.)
Estimated mean flow rate at midpoint of channel =     11.285(CFS)
```

```
Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   2.47(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0092
Corrected/adjusted channel slope =  0.0092
Travel time =    7.37 min.     TC =   22.27  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.653
Decimal fraction soil group A = 0.600
Decimal fraction soil group B = 0.400
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  71.40
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.409(In/Hr) for a    10.0 year storm
Subarea runoff =      8.601(CFS) for      9.350(Ac.)
Total runoff =     14.716(CFS)       Total area =      14.880(Ac.)
End of computations, total study area =           14.88 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  70.4
```

- **Area 'B' – 100 Year Pre-Development Condition – Rational Method**

```
                Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
        Rational Hydrology Study        Date: 07/17/19  File:EXB100.out
------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
EXISTING CONDITION RATIONAL METHOD - 100 YEAR STORM
HUNSAKER & ASSOCIATES, JULY 16, 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 6407

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 3

2 year, 1 hour precipitation =  0.550(In.)
100 year, 1 hour precipitation =  1.450(In.)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.450(In/Hr)
Slope of intensity duration curve = 0.4300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      200.000 to Point/Station      201.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
Initial area flow distance =   850.000(Ft.)
Top (of initial area) elevation =   940.000(Ft.)
Bottom (of initial area) elevation =   905.000(Ft.)
Difference in elevation =    35.000(Ft.)
Slope =    0.04118  s(percent)=       4.12
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   14.898 min.
Rainfall intensity =      2.640(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.822
Decimal fraction soil group A = 0.850
Decimal fraction soil group B = 0.150
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  84.19
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =     11.999(CFS)
Total initial stream area =        5.530(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
____________________________________________________________________________
Top of natural channel elevation =    905.000(Ft.)
End of natural channel elevation =    895.000(Ft.)
Length of natural channel  =  1091.000(Ft.)
Estimated mean flow rate at midpoint of channel =     22.143(CFS)
```

```
Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   2.95(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0092
Corrected/adjusted channel slope =  0.0092
Travel time =    6.17 min.     TC =   21.06  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.821
Decimal fraction soil group A = 0.600
Decimal fraction soil group B = 0.400
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  85.84
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.274(In/Hr) for a   100.0 year storm
Subarea runoff =     17.451(CFS) for      9.350(Ac.)
Total runoff =     29.450(CFS)       Total area =      14.880(Ac.)
End of computations, total study area =           14.88 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  70.4
```

- **Area 'B' – 2 Year Developed Condition – Rational Method**

```
                Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
        Rational Hydrology Study        Date: 07/16/19  File:PRB002.out
------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
DEVELOPED CONDITION RATIONAL METHOD - 2 YEAR STORM
HUNSAKER & ASSOCIATES, JULY 16, 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 6407

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =    2.00 Antecedent Moisture Condition = 1

2 year, 1 hour precipitation =  0.550(In.)
100 year, 1 hour precipitation =  1.450(In.)

Storm event year =   2.0
Calculated rainfall intensity data:
1 hour intensity =  0.550(In/Hr)
Slope of intensity duration curve = 0.4300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      200.000 to Point/Station      201.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
Initial area flow distance =   481.000(Ft.)
Top (of initial area) elevation =   931.500(Ft.)
Bottom (of initial area) elevation =   926.800(Ft.)
Difference in elevation =     4.700(Ft.)
Slope =    0.00977  s(percent)=       0.98
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.953 min.
Rainfall intensity =      1.246(In/Hr) for a     2.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.832
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  25.20
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.783(CFS)
Total initial stream area =        1.720(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____________________________________________________________________________
Upstream point/station elevation =   920.800(Ft.)
Downstream point/station elevation =   917.000(Ft.)
Pipe length  =   414.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.783(CFS)
Nearest computed pipe diameter  =     12.00(In.)
```

```
Calculated individual pipe flow  =     1.783(CFS)
Normal flow depth in pipe =    6.16(In.)
Flow top width inside pipe =   12.00(In.)
Critical Depth =    6.82(In.)
Pipe flow velocity =      4.39(Ft/s)
Travel time through pipe =    1.57 min.
Time of concentration (TC) =    10.52 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      1.720(Ac.)
Runoff from this stream =      1.783(CFS)
Time of concentration =   10.52 min.
Rainfall intensity =     1.163(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      203.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
Initial area flow distance =   423.000(Ft.)
Top (of initial area) elevation =   926.800(Ft.)
Bottom (of initial area) elevation =   923.200(Ft.)
Difference in elevation =     3.600(Ft.)
Slope =    0.00851  s(percent)=       0.85
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.743 min.
Rainfall intensity =      1.259(In/Hr) for a     2.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.824
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  16.20
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      2.023(CFS)
Total initial stream area =        1.950(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      202.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   917.300(Ft.)
Downstream point/station elevation =   917.000(Ft.)
Pipe length  =    28.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.023(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     2.023(CFS)
Normal flow depth in pipe =    6.34(In.)
Flow top width inside pipe =   11.98(In.)
Critical Depth =    7.28(In.)
Pipe flow velocity =      4.80(Ft/s)
Travel time through pipe =    0.10 min.
Time of concentration (TC) =     8.84 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      202.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      1.950(Ac.)
Runoff from this stream =      2.023(CFS)
Time of concentration =    8.84 min.
Rainfall intensity =     1.253(In/Hr)
Summary of stream data:
```

```
Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        1.783     10.52                1.163
2        2.023      8.84                1.253
Largest stream flow has longer or shorter time of concentration
Qp =      2.023 + sum of
          Qa          Tb/Ta
           1.783 *    0.840 =      1.497
Qp =      3.520

Total of 2 streams to confluence:
Flow rates before confluence point:
       1.783       2.023
Area of streams before confluence:
        1.720        1.950
Results of confluence:
Total flow rate =      3.520(CFS)
Time of concentration =     8.840 min.
Effective stream area after confluence =      3.670(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      204.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =   917.000(Ft.)
Downstream point/station elevation =   914.700(Ft.)
Pipe length  =   242.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.520(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     3.520(CFS)
Normal flow depth in pipe =    8.02(In.)
Flow top width inside pipe =   14.96(In.)
Critical Depth =    9.08(In.)
Pipe flow velocity =      5.27(Ft/s)
Travel time through pipe =    0.76 min.
Time of concentration (TC) =     9.61 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      204.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      3.670(Ac.)
Runoff from this stream =      3.520(CFS)
Time of concentration =    9.61 min.
Rainfall intensity =     1.209(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      205.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------
Initial area flow distance =   275.000(Ft.)
Top (of initial area) elevation =   923.100(Ft.)
Bottom (of initial area) elevation =   920.800(Ft.)
Difference in elevation =     2.300(Ft.)
Slope =    0.00836  s(percent)=       0.84
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.385 min.
Rainfall intensity =      1.354(In/Hr) for a     2.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.837
Decimal fraction soil group A = 0.300
Decimal fraction soil group B = 0.700
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  29.80
Pervious area fraction =  0.100; Impervious fraction =  0.900
```

```
Initial subarea runoff =      1.609(CFS)
Total initial stream area =        1.420(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      204.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =   915.000(Ft.)
Downstream point/station elevation =   914.700(Ft.)
Pipe length  =    18.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.609(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.609(CFS)
Normal flow depth in pipe =    5.84(In.)
Flow top width inside pipe =    8.59(In.)
Critical Depth =    7.00(In.)
Pipe flow velocity =      5.31(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     7.44 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      204.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      1.420(Ac.)
Runoff from this stream =      1.609(CFS)
Time of concentration =    7.44 min.
Rainfall intensity =     1.349(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        3.520      9.61                1.209
2        1.609      7.44                1.349
Largest stream flow has longer time of concentration
Qp =      3.520 + sum of
          Qb         Ia/Ib
           1.609 *    0.896 =      1.442
Qp =      4.962

Total of 2 streams to confluence:
Flow rates before confluence point:
       3.520       1.609
Area of streams before confluence:
        3.670        1.420
Results of confluence:
Total flow rate =      4.962(CFS)
Time of concentration =     9.605 min.
Effective stream area after confluence =      5.090(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      206.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =   914.700(Ft.)
Downstream point/station elevation =   911.300(Ft.)
Pipe length  =   335.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.962(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     4.962(CFS)
Normal flow depth in pipe =    9.81(In.)
Flow top width inside pipe =   14.27(In.)
Critical Depth =   10.84(In.)
Pipe flow velocity =      5.84(Ft/s)
Travel time through pipe =    0.96 min.
Time of concentration (TC) =    10.56 min.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      206.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      5.090(Ac.)
Runoff from this stream =      4.962(CFS)
Time of concentration =   10.56 min.
Rainfall intensity =     1.161(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      207.000 to Point/Station      208.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
Initial area flow distance =   247.000(Ft.)
Top (of initial area) elevation =   926.500(Ft.)
Bottom (of initial area) elevation =   924.000(Ft.)
Difference in elevation =     2.500(Ft.)
Slope =    0.01012  s(percent)=       1.01
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.810 min.
Rainfall intensity =      1.402(In/Hr) for a     2.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.825
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  16.20
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.273(CFS)
Total initial stream area =        1.100(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      209.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =   920.000(Ft.)
Downstream point/station elevation =   915.500(Ft.)
Pipe length  =   271.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.273(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.273(CFS)
Normal flow depth in pipe =    5.01(In.)
Flow top width inside pipe =    8.94(In.)
Critical Depth =    6.24(In.)
Pipe flow velocity =      5.04(Ft/s)
Travel time through pipe =    0.90 min.
Time of concentration (TC) =     7.71 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      209.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      1.100(Ac.)
Runoff from this stream =      1.273(CFS)
Time of concentration =    7.71 min.
Rainfall intensity =     1.329(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      211.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
```

```
Initial area flow distance =   203.000(Ft.)
Top (of initial area) elevation =   922.500(Ft.)
Bottom (of initial area) elevation =   921.600(Ft.)
Difference in elevation =     0.900(Ft.)
Slope =    0.00443  s(percent)=       0.44
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.426 min.
Rainfall intensity =      1.351(In/Hr) for a     2.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.833
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  25.20
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.901(CFS)
Total initial stream area =        1.690(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      211.000 to Point/Station      209.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =   915.700(Ft.)
Downstream point/station elevation =   915.500(Ft.)
Pipe length  =    18.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.901(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.901(CFS)
Normal flow depth in pipe =    6.05(In.)
Flow top width inside pipe =   12.00(In.)
Critical Depth =    7.05(In.)
Pipe flow velocity =      4.80(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     7.49 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      211.000 to Point/Station      209.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      1.690(Ac.)
Runoff from this stream =      1.901(CFS)
Time of concentration =    7.49 min.
Rainfall intensity =     1.346(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        1.273      7.71                 1.329
2        1.901      7.49                 1.346
Largest stream flow has longer or shorter time of concentration
Qp =      1.901 + sum of
          Qa          Tb/Ta
           1.273 *    0.972 =      1.237
Qp =      3.138

Total of 2 streams to confluence:
Flow rates before confluence point:
       1.273       1.901
Area of streams before confluence:
        1.100        1.690
Results of confluence:
Total flow rate =      3.138(CFS)
Time of concentration =     7.489 min.
Effective stream area after confluence =      2.790(Ac.)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      209.000 to Point/Station      206.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   915.500(Ft.)
Downstream point/station elevation =   911.300(Ft.)
Pipe length  =   177.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.138(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     3.138(CFS)
Normal flow depth in pipe =    6.50(In.)
Flow top width inside pipe =   11.96(In.)
Critical Depth =    9.10(In.)
Pipe flow velocity =      7.22(Ft/s)
Travel time through pipe =    0.41 min.
Time of concentration (TC) =     7.90 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      209.000 to Point/Station      206.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      2.790(Ac.)
Runoff from this stream =      3.138(CFS)
Time of concentration =    7.90 min.
Rainfall intensity =     1.315(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        4.962     10.56               1.161
2        3.138      7.90               1.315
Largest stream flow has longer time of concentration
Qp =      4.962 + sum of
          Qb         Ia/Ib
           3.138 *    0.883 =      2.769
Qp =      7.731

Total of 2 main streams to confluence:
Flow rates before confluence point:
       4.962       3.138
Area of streams before confluence:
        5.090        2.790


Results of confluence:
Total flow rate =      7.731(CFS)
Time of concentration =    10.561 min.
Effective stream area after confluence  =      7.880(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      212.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   911.300(Ft.)
Downstream point/station elevation =   910.000(Ft.)
Pipe length  =   126.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.731(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     7.731(CFS)
Normal flow depth in pipe =   11.36(In.)
Flow top width inside pipe =   17.37(In.)
Critical Depth =   12.92(In.)
Pipe flow velocity =      6.58(Ft/s)
Travel time through pipe =    0.32 min.
Time of concentration (TC) =    10.88 min.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      212.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.880(Ac.)
Runoff from this stream =      7.731(CFS)
Time of concentration =   10.88 min.
Rainfall intensity =     1.146(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      213.000 to Point/Station      214.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
Initial area flow distance =   322.000(Ft.)
Top (of initial area) elevation =   921.500(Ft.)
Bottom (of initial area) elevation =   918.700(Ft.)
Difference in elevation =     2.800(Ft.)
Slope =    0.00870  s(percent)=       0.87
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.806 min.
Rainfall intensity =      1.322(In/Hr) for a     2.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.833
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  25.20
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      2.531(CFS)
Total initial stream area =        2.300(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      214.000 to Point/Station      212.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =   913.700(Ft.)
Downstream point/station elevation =   910.000(Ft.)
Pipe length  =    20.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.531(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     2.531(CFS)
Normal flow depth in pipe =    3.71(In.)
Flow top width inside pipe =    8.86(In.)
Critical Depth =    8.33(In.)
Pipe flow velocity =     14.74(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     7.83 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      214.000 to Point/Station      212.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      2.300(Ac.)
Runoff from this stream =      2.531(CFS)
Time of concentration =    7.83 min.
Rainfall intensity =     1.320(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        7.731     10.88                1.146
2        2.531      7.83                1.320
Largest stream flow has longer time of concentration
Qp =      7.731 + sum of
```

```
          Qb         Ia/Ib
           2.531 *    0.868 =      2.197
Qp =       9.929

Total of 2 streams to confluence:
Flow rates before confluence point:
       7.731       2.531
Area of streams before confluence:
        7.880        2.300
Results of confluence:
Total flow rate =      9.929(CFS)
Time of concentration =    10.880 min.
Effective stream area after confluence =     10.180(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      212.000 to Point/Station      215.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   910.000(Ft.)
Downstream point/station elevation =   908.300(Ft.)
Pipe length  =   169.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.929(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     9.929(CFS)
Normal flow depth in pipe =   13.90(In.)
Flow top width inside pipe =   15.10(In.)
Critical Depth =   14.58(In.)
Pipe flow velocity =      6.78(Ft/s)
Travel time through pipe =    0.42 min.
Time of concentration (TC) =    11.30 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      212.000 to Point/Station      215.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     10.180(Ac.)
Runoff from this stream =      9.929(CFS)
Time of concentration =   11.30 min.
Rainfall intensity =     1.128(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      216.000 to Point/Station      217.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Initial area flow distance =   129.000(Ft.)
Top (of initial area) elevation =   922.500(Ft.)
Bottom (of initial area) elevation =   920.100(Ft.)
Difference in elevation =     2.400(Ft.)
Slope =    0.01860  s(percent)=       1.86
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      1.601(In/Hr) for a     2.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.846
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  36.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.691(CFS)
Total initial stream area =        0.510(Ac.)
Pervious area fraction = 0.100
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      217.000 to Point/Station      218.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   914.100(Ft.)
Downstream point/station elevation =   911.800(Ft.)
Pipe length  =   315.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.691(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.691(CFS)
Normal flow depth in pipe =    4.44(In.)
Flow top width inside pipe =    9.00(In.)
Critical Depth =    4.54(In.)
Pipe flow velocity =      3.18(Ft/s)
Travel time through pipe =    1.65 min.
Time of concentration (TC) =     6.65 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      217.000 to Point/Station      218.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      0.510(Ac.)
Runoff from this stream =      0.691(CFS)
Time of concentration =    6.65 min.
Rainfall intensity =     1.416(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      217.000 to Point/Station      219.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
Initial area flow distance =   282.000(Ft.)
Top (of initial area) elevation =   920.100(Ft.)
Bottom (of initial area) elevation =   917.800(Ft.)
Difference in elevation =     2.300(Ft.)
Slope =    0.00816  s(percent)=       0.82
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.498 min.
Rainfall intensity =      1.345(In/Hr) for a     2.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.833
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  25.20
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.930(CFS)
Total initial stream area =        0.830(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      219.000 to Point/Station      218.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   912.000(Ft.)
Downstream point/station elevation =   911.800(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.930(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.930(CFS)
Normal flow depth in pipe =    4.43(In.)
Flow top width inside pipe =    9.00(In.)
Critical Depth =    5.29(In.)
Pipe flow velocity =      4.29(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     7.56 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

```
Process from Point/Station      219.000 to Point/Station      218.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      0.830(Ac.)
Runoff from this stream =      0.930(CFS)
Time of concentration =    7.56 min.
Rainfall intensity =     1.341(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        0.691      6.65                1.416
2        0.930      7.56                1.341
Largest stream flow has longer time of concentration
Qp =      0.930 + sum of
          Qb         Ia/Ib
           0.691 *    0.947 =      0.654
Qp =      1.584

Total of 2 streams to confluence:
Flow rates before confluence point:
       0.691       0.930
Area of streams before confluence:
        0.510        0.830
Results of confluence:
Total flow rate =      1.584(CFS)
Time of concentration =     7.556 min.
Effective stream area after confluence =      1.340(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      218.000 to Point/Station      215.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____________________________________________________________________
Upstream point/station elevation =   911.800(Ft.)
Downstream point/station elevation =   908.300(Ft.)
Pipe length  =   247.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.584(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.584(CFS)
Normal flow depth in pipe =    6.12(In.)
Flow top width inside pipe =    8.40(In.)
Critical Depth =    6.95(In.)
Pipe flow velocity =      4.96(Ft/s)
Travel time through pipe =    0.83 min.
Time of concentration (TC) =     8.39 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      218.000 to Point/Station      215.000
**** CONFLUENCE OF MAIN STREAMS ****
____________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      1.340(Ac.)
Runoff from this stream =      1.584(CFS)
Time of concentration =    8.39 min.
Rainfall intensity =     1.282(In/Hr)
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      219.000 to Point/Station      220.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________
Initial area flow distance =   218.000(Ft.)
Top (of initial area) elevation =   917.800(Ft.)
Bottom (of initial area) elevation =   916.800(Ft.)
Difference in elevation =     1.000(Ft.)
Slope =    0.00459  s(percent)=       0.46
```

```
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.589 min.
Rainfall intensity =      1.338(In/Hr) for a     2.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.825
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  16.20
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.960(CFS)
Total initial stream area =        0.870(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      220.000 to Point/Station      215.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   911.000(Ft.)
Downstream point/station elevation =   908.300(Ft.)
Pipe length  =    10.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.960(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.960(CFS)
Normal flow depth in pipe =    2.37(In.)
Flow top width inside pipe =    5.87(In.)
Critical Depth =    5.62(In.)
Pipe flow velocity =     13.31(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     7.60 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      220.000 to Point/Station      215.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      0.870(Ac.)
Runoff from this stream =      0.960(CFS)
Time of concentration =    7.60 min.
Rainfall intensity =     1.337(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        9.929     11.30               1.128
2        1.584      8.39               1.282
3        0.960      7.60               1.337
Largest stream flow has longer time of concentration
Qp =      9.929 + sum of
          Qb         Ia/Ib
           1.584 *    0.880 =      1.393
          Qb         Ia/Ib
           0.960 *    0.843 =      0.810
Qp =     12.132

Total of 3 main streams to confluence:
Flow rates before confluence point:
       9.929       1.584       0.960
Area of streams before confluence:
       10.180        1.340        0.870


Results of confluence:
Total flow rate =     12.132(CFS)
Time of concentration =    11.296 min.
Effective stream area after confluence  =     12.390(Ac.)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      215.000 to Point/Station      221.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   908.300(Ft.)
Downstream point/station elevation =   895.000(Ft.)
Pipe length  =   112.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.132(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =    12.132(CFS)
Normal flow depth in pipe =    9.70(In.)
Flow top width inside pipe =    9.44(In.)
Critical depth could not be calculated.
Pipe flow velocity =     17.82(Ft/s)
Travel time through pipe =    0.10 min.
Time of concentration (TC) =    11.40 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      215.000 to Point/Station      221.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Runoff Coefficient = 0.823
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  16.20
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    11.40 min.
Rainfall intensity =      1.123(In/Hr) for a     2.0 year storm
Subarea runoff =      1.331(CFS) for      1.440(Ac.)
Total runoff =     13.462(CFS)       Total area =      13.830(Ac.)
End of computations, total study area =           13.83 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  40.3
```

- **Area 'B' – 10 Year Developed Condition – Rational Method**

```
                Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
        Rational Hydrology Study        Date: 07/16/19  File:PRB010.out
------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
DEVELOPED CONDITION RATIONAL METHOD - 10 YEAR STORM
HUNSAKER & ASSOCIATES, JULY 16, 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 6407

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

2 year, 1 hour precipitation =  0.550(In.)
100 year, 1 hour precipitation =  1.450(In.)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.920(In/Hr)
Slope of intensity duration curve = 0.4300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      200.000 to Point/Station      201.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
Initial area flow distance =   481.000(Ft.)
Top (of initial area) elevation =   931.500(Ft.)
Bottom (of initial area) elevation =   926.800(Ft.)
Difference in elevation =     4.700(Ft.)
Slope =    0.00977  s(percent)=       0.98
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.953 min.
Rainfall intensity =      2.085(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.860
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  44.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      3.083(CFS)
Total initial stream area =        1.720(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____________________________________________________________________________
Upstream point/station elevation =   920.800(Ft.)
Downstream point/station elevation =   917.000(Ft.)
Pipe length  =   414.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.083(CFS)
Nearest computed pipe diameter  =     12.00(In.)
```

```
Calculated individual pipe flow  =     3.083(CFS)
Normal flow depth in pipe =    8.93(In.)
Flow top width inside pipe =   10.47(In.)
Critical Depth =    9.03(In.)
Pipe flow velocity =      4.92(Ft/s)
Travel time through pipe =    1.40 min.
Time of concentration (TC) =    10.36 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      1.720(Ac.)
Runoff from this stream =      3.083(CFS)
Time of concentration =   10.36 min.
Rainfall intensity =     1.959(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      203.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
Initial area flow distance =   423.000(Ft.)
Top (of initial area) elevation =   926.800(Ft.)
Bottom (of initial area) elevation =   923.200(Ft.)
Difference in elevation =     3.600(Ft.)
Slope =    0.00851  s(percent)=       0.85
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.743 min.
Rainfall intensity =      2.107(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.848
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  32.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      3.485(CFS)
Total initial stream area =        1.950(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      202.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   917.300(Ft.)
Downstream point/station elevation =   917.000(Ft.)
Pipe length  =    28.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.485(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     3.485(CFS)
Normal flow depth in pipe =    9.29(In.)
Flow top width inside pipe =   10.03(In.)
Critical Depth =    9.57(In.)
Pipe flow velocity =      5.34(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =     8.83 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      202.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      1.950(Ac.)
Runoff from this stream =      3.485(CFS)
Time of concentration =    8.83 min.
Rainfall intensity =     2.098(In/Hr)
Summary of stream data:
```

```
Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        3.083     10.36                1.959
2        3.485      8.83                2.098
Largest stream flow has longer or shorter time of concentration
Qp =      3.485 + sum of
          Qa          Tb/Ta
           3.083 *    0.853 =      2.629
Qp =      6.114

Total of 2 streams to confluence:
Flow rates before confluence point:
       3.083       3.485
Area of streams before confluence:
        1.720        1.950
Results of confluence:
Total flow rate =      6.114(CFS)
Time of concentration =     8.830 min.
Effective stream area after confluence =      3.670(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      204.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =   917.000(Ft.)
Downstream point/station elevation =   914.700(Ft.)
Pipe length  =   242.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.114(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     6.114(CFS)
Normal flow depth in pipe =   11.93(In.)
Flow top width inside pipe =   12.10(In.)
Critical Depth =   11.99(In.)
Pipe flow velocity =      5.85(Ft/s)
Travel time through pipe =    0.69 min.
Time of concentration (TC) =     9.52 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      204.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      3.670(Ac.)
Runoff from this stream =      6.114(CFS)
Time of concentration =    9.52 min.
Rainfall intensity =     2.031(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      205.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
Initial area flow distance =   275.000(Ft.)
Top (of initial area) elevation =   923.100(Ft.)
Bottom (of initial area) elevation =   920.800(Ft.)
Difference in elevation =     2.300(Ft.)
Slope =    0.00836  s(percent)=       0.84
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.385 min.
Rainfall intensity =      2.265(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.866
Decimal fraction soil group A = 0.300
Decimal fraction soil group B = 0.700
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  48.80
Pervious area fraction =  0.100; Impervious fraction =  0.900
```

```
Initial subarea runoff =      2.784(CFS)
Total initial stream area =        1.420(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      204.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =   915.000(Ft.)
Downstream point/station elevation =   914.700(Ft.)
Pipe length  =    18.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.784(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     2.784(CFS)
Normal flow depth in pipe =    6.74(In.)
Flow top width inside pipe =   11.91(In.)
Critical Depth =    8.58(In.)
Pipe flow velocity =      6.13(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =     7.43 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      204.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      1.420(Ac.)
Runoff from this stream =      2.784(CFS)
Time of concentration =    7.43 min.
Rainfall intensity =     2.259(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        6.114      9.52                2.031
2        2.784      7.43                2.259
Largest stream flow has longer time of concentration
Qp =      6.114 + sum of
          Qb         Ia/Ib
           2.784 *    0.899 =      2.504
Qp =      8.618

Total of 2 streams to confluence:
Flow rates before confluence point:
       6.114       2.784
Area of streams before confluence:
        3.670        1.420
Results of confluence:
Total flow rate =      8.618(CFS)
Time of concentration =     9.520 min.
Effective stream area after confluence =      5.090(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      206.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =   914.700(Ft.)
Downstream point/station elevation =   911.300(Ft.)
Pipe length  =   335.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.618(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     8.618(CFS)
Normal flow depth in pipe =   12.34(In.)
Flow top width inside pipe =   16.71(In.)
Critical Depth =   13.64(In.)
Pipe flow velocity =      6.67(Ft/s)
Travel time through pipe =    0.84 min.
Time of concentration (TC) =    10.36 min.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      206.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      5.090(Ac.)
Runoff from this stream =      8.618(CFS)
Time of concentration =   10.36 min.
Rainfall intensity =     1.959(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      207.000 to Point/Station      208.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
Initial area flow distance =   247.000(Ft.)
Top (of initial area) elevation =   926.500(Ft.)
Bottom (of initial area) elevation =   924.000(Ft.)
Difference in elevation =     2.500(Ft.)
Slope =    0.01012  s(percent)=       1.01
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.810 min.
Rainfall intensity =      2.346(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.851
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  32.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      2.195(CFS)
Total initial stream area =        1.100(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      209.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =   920.000(Ft.)
Downstream point/station elevation =   915.500(Ft.)
Pipe length  =   271.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.195(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     2.195(CFS)
Normal flow depth in pipe =    5.85(In.)
Flow top width inside pipe =   12.00(In.)
Critical Depth =    7.60(In.)
Pipe flow velocity =      5.78(Ft/s)
Travel time through pipe =    0.78 min.
Time of concentration (TC) =     7.59 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      209.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      1.100(Ac.)
Runoff from this stream =      2.195(CFS)
Time of concentration =    7.59 min.
Rainfall intensity =     2.239(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      211.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
```

```
Initial area flow distance =   203.000(Ft.)
Top (of initial area) elevation =   922.500(Ft.)
Bottom (of initial area) elevation =   921.600(Ft.)
Difference in elevation =     0.900(Ft.)
Slope =    0.00443  s(percent)=       0.44
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.426 min.
Rainfall intensity =      2.260(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.861
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  44.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      3.290(CFS)
Total initial stream area =        1.690(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      211.000 to Point/Station      209.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =   915.700(Ft.)
Downstream point/station elevation =   915.500(Ft.)
Pipe length  =    18.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.290(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     3.290(CFS)
Normal flow depth in pipe =    8.71(In.)
Flow top width inside pipe =   10.71(In.)
Critical Depth =    9.32(In.)
Pipe flow velocity =      5.39(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     7.48 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      211.000 to Point/Station      209.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      1.690(Ac.)
Runoff from this stream =      3.290(CFS)
Time of concentration =    7.48 min.
Rainfall intensity =     2.253(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        2.195      7.59                2.239
2        3.290      7.48                2.253
Largest stream flow has longer or shorter time of concentration
Qp =      3.290 + sum of
          Qa          Tb/Ta
           2.195 *    0.986 =      2.164
Qp =      5.453

Total of 2 streams to confluence:
Flow rates before confluence point:
       2.195       3.290
Area of streams before confluence:
        1.100        1.690
Results of confluence:
Total flow rate =      5.453(CFS)
Time of concentration =     7.482 min.
Effective stream area after confluence =      2.790(Ac.)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      209.000 to Point/Station      206.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   915.500(Ft.)
Downstream point/station elevation =   911.300(Ft.)
Pipe length  =   177.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.453(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     5.453(CFS)
Normal flow depth in pipe =    9.77(In.)
Flow top width inside pipe =    9.33(In.)
Critical Depth =   11.24(In.)
Pipe flow velocity =      7.97(Ft/s)
Travel time through pipe =    0.37 min.
Time of concentration (TC) =     7.85 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      209.000 to Point/Station      206.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      2.790(Ac.)
Runoff from this stream =      5.453(CFS)
Time of concentration =    7.85 min.
Rainfall intensity =     2.206(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        8.618     10.36               1.959
2        5.453      7.85               2.206
Largest stream flow has longer time of concentration
Qp =      8.618 + sum of
          Qb         Ia/Ib
           5.453 *    0.888 =      4.841
Qp =     13.459

Total of 2 main streams to confluence:
Flow rates before confluence point:
       8.618       5.453
Area of streams before confluence:
        5.090        2.790


Results of confluence:
Total flow rate =     13.459(CFS)
Time of concentration =    10.357 min.
Effective stream area after confluence  =      7.880(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      212.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   911.300(Ft.)
Downstream point/station elevation =   910.000(Ft.)
Pipe length  =   126.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    13.459(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    13.459(CFS)
Normal flow depth in pipe =   14.70(In.)
Flow top width inside pipe =   19.25(In.)
Critical Depth =   16.39(In.)
Pipe flow velocity =      7.49(Ft/s)
Travel time through pipe =    0.28 min.
Time of concentration (TC) =    10.64 min.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      212.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.880(Ac.)
Runoff from this stream =     13.459(CFS)
Time of concentration =   10.64 min.
Rainfall intensity =     1.936(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      213.000 to Point/Station      214.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
Initial area flow distance =   322.000(Ft.)
Top (of initial area) elevation =   921.500(Ft.)
Bottom (of initial area) elevation =   918.700(Ft.)
Difference in elevation =     2.800(Ft.)
Slope =    0.00870  s(percent)=       0.87
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.806 min.
Rainfall intensity =      2.212(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.861
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  44.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      4.380(CFS)
Total initial stream area =        2.300(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      214.000 to Point/Station      212.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =   913.700(Ft.)
Downstream point/station elevation =   910.000(Ft.)
Pipe length  =    20.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.380(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     4.380(CFS)
Normal flow depth in pipe =    5.10(In.)
Flow top width inside pipe =    8.92(In.)
Critical depth could not be calculated.
Pipe flow velocity =     16.93(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     7.83 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      214.000 to Point/Station      212.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      2.300(Ac.)
Runoff from this stream =      4.380(CFS)
Time of concentration =    7.83 min.
Rainfall intensity =     2.210(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       13.459     10.64                1.936
2        4.380      7.83                2.210
Largest stream flow has longer time of concentration
Qp =     13.459 + sum of
```

```
          Qb         Ia/Ib
           4.380 *    0.876 =      3.838
Qp =     17.298

Total of 2 streams to confluence:
Flow rates before confluence point:
      13.459       4.380
Area of streams before confluence:
        7.880        2.300
Results of confluence:
Total flow rate =     17.298(CFS)
Time of concentration =    10.637 min.
Effective stream area after confluence =     10.180(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      212.000 to Point/Station      215.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   910.000(Ft.)
Downstream point/station elevation =   908.300(Ft.)
Pipe length  =   169.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.298(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    17.298(CFS)
Normal flow depth in pipe =   15.68(In.)
Flow top width inside pipe =   22.84(In.)
Critical Depth =   17.98(In.)
Pipe flow velocity =      7.95(Ft/s)
Travel time through pipe =    0.35 min.
Time of concentration (TC) =    10.99 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      212.000 to Point/Station      215.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     10.180(Ac.)
Runoff from this stream =     17.298(CFS)
Time of concentration =   10.99 min.
Rainfall intensity =     1.909(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      216.000 to Point/Station      217.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Initial area flow distance =   129.000(Ft.)
Top (of initial area) elevation =   922.500(Ft.)
Bottom (of initial area) elevation =   920.100(Ft.)
Difference in elevation =     2.400(Ft.)
Slope =    0.01860  s(percent)=       1.86
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      2.679(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.875
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  56.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.195(CFS)
Total initial stream area =        0.510(Ac.)
Pervious area fraction = 0.100
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      217.000 to Point/Station      218.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   914.100(Ft.)
Downstream point/station elevation =   911.800(Ft.)
Pipe length  =   315.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.195(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.195(CFS)
Normal flow depth in pipe =    6.35(In.)
Flow top width inside pipe =    8.20(In.)
Critical Depth =    6.04(In.)
Pipe flow velocity =      3.59(Ft/s)
Travel time through pipe =    1.46 min.
Time of concentration (TC) =     6.46 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      217.000 to Point/Station      218.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      0.510(Ac.)
Runoff from this stream =      1.195(CFS)
Time of concentration =    6.46 min.
Rainfall intensity =     2.399(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      217.000 to Point/Station      219.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
Initial area flow distance =   282.000(Ft.)
Top (of initial area) elevation =   920.100(Ft.)
Bottom (of initial area) elevation =   917.800(Ft.)
Difference in elevation =     2.300(Ft.)
Slope =    0.00816  s(percent)=       0.82
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.498 min.
Rainfall intensity =      2.251(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.861
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  44.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.609(CFS)
Total initial stream area =        0.830(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      219.000 to Point/Station      218.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   912.000(Ft.)
Downstream point/station elevation =   911.800(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.609(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.609(CFS)
Normal flow depth in pipe =    6.33(In.)
Flow top width inside pipe =    8.22(In.)
Critical Depth =    7.00(In.)
Pipe flow velocity =      4.85(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =     7.55 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

```
Process from Point/Station      219.000 to Point/Station      218.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      0.830(Ac.)
Runoff from this stream =      1.609(CFS)
Time of concentration =    7.55 min.
Rainfall intensity =     2.244(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        1.195      6.46                 2.399
2        1.609      7.55                 2.244
Largest stream flow has longer time of concentration
Qp =      1.609 + sum of
          Qb         Ia/Ib
           1.195 *    0.935 =      1.118
Qp =      2.727

Total of 2 streams to confluence:
Flow rates before confluence point:
       1.195       1.609
Area of streams before confluence:
        0.510        0.830
Results of confluence:
Total flow rate =      2.727(CFS)
Time of concentration =     7.549 min.
Effective stream area after confluence =      1.340(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      218.000 to Point/Station      215.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____________________________________________________________________
Upstream point/station elevation =   911.800(Ft.)
Downstream point/station elevation =   908.300(Ft.)
Pipe length  =   247.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.727(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     2.727(CFS)
Normal flow depth in pipe =    7.00(In.)
Flow top width inside pipe =   11.83(In.)
Critical Depth =    8.49(In.)
Pipe flow velocity =      5.73(Ft/s)
Travel time through pipe =    0.72 min.
Time of concentration (TC) =     8.27 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      218.000 to Point/Station      215.000
**** CONFLUENCE OF MAIN STREAMS ****
____________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      1.340(Ac.)
Runoff from this stream =      2.727(CFS)
Time of concentration =    8.27 min.
Rainfall intensity =     2.158(In/Hr)
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      219.000 to Point/Station      220.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________
Initial area flow distance =   218.000(Ft.)
Top (of initial area) elevation =   917.800(Ft.)
Bottom (of initial area) elevation =   916.800(Ft.)
Difference in elevation =     1.000(Ft.)
Slope =    0.00459  s(percent)=       0.46
```

```
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.589 min.
Rainfall intensity =      2.239(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.850
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  32.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.655(CFS)
Total initial stream area =        0.870(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      220.000 to Point/Station      215.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =   911.000(Ft.)
Downstream point/station elevation =   908.300(Ft.)
Pipe length  =    10.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.655(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     1.655(CFS)
Normal flow depth in pipe =    3.24(In.)
Flow top width inside pipe =    5.98(In.)
Critical depth could not be calculated.
Pipe flow velocity =     15.32(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     7.60 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      220.000 to Point/Station      215.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      0.870(Ac.)
Runoff from this stream =      1.655(CFS)
Time of concentration =    7.60 min.
Rainfall intensity =     2.238(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       17.298     10.99               1.909
2        2.727      8.27               2.158
3        1.655      7.60               2.238
Largest stream flow has longer time of concentration
Qp =     17.298 + sum of
          Qb         Ia/Ib
           2.727 *    0.885 =      2.412
          Qb         Ia/Ib
           1.655 *    0.853 =      1.412
Qp =     21.122

Total of 3 main streams to confluence:
Flow rates before confluence point:
      17.298       2.727       1.655
Area of streams before confluence:
       10.180        1.340        0.870


Results of confluence:
Total flow rate =     21.122(CFS)
Time of concentration =    10.991 min.
Effective stream area after confluence  =     12.390(Ac.)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      215.000 to Point/Station      221.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   908.300(Ft.)
Downstream point/station elevation =   895.000(Ft.)
Pipe length  =   112.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    21.122(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    21.122(CFS)
Normal flow depth in pipe =   11.65(In.)
Flow top width inside pipe =   12.50(In.)
Critical depth could not be calculated.
Pipe flow velocity =     20.64(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =    11.08 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      215.000 to Point/Station      221.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Runoff Coefficient = 0.846
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  32.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    11.08 min.
Rainfall intensity =      1.903(In/Hr) for a    10.0 year storm
Subarea runoff =      2.318(CFS) for      1.440(Ac.)
Total runoff =     23.441(CFS)       Total area =      13.830(Ac.)
End of computations, total study area =           13.83 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  40.3
```

- **Area 'B' – 100 Year Developed Condition – Rational Method**

```
                Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
        Rational Hydrology Study        Date: 07/16/19  File:PRB100.out
------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
DEVELOPED CONDITION RATIONAL METHOD - 100 YEAR STORM
HUNSAKER & ASSOCIATES, JULY 16, 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 6407

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 3

2 year, 1 hour precipitation =  0.550(In.)
100 year, 1 hour precipitation =  1.450(In.)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.450(In/Hr)
Slope of intensity duration curve = 0.4300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      200.000 to Point/Station      201.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
Initial area flow distance =   481.000(Ft.)
Top (of initial area) elevation =   931.500(Ft.)
Bottom (of initial area) elevation =   926.800(Ft.)
Difference in elevation =     4.700(Ft.)
Slope =    0.00977  s(percent)=       0.98
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.953 min.
Rainfall intensity =      3.286(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.883
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  64.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      4.992(CFS)
Total initial stream area =        1.720(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____________________________________________________________________________
Upstream point/station elevation =   920.800(Ft.)
Downstream point/station elevation =   917.000(Ft.)
Pipe length  =   414.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.992(CFS)
Nearest computed pipe diameter  =     15.00(In.)
```

```
Calculated individual pipe flow  =     4.992(CFS)
Normal flow depth in pipe =   10.21(In.)
Flow top width inside pipe =   13.99(In.)
Critical Depth =   10.86(In.)
Pipe flow velocity =      5.61(Ft/s)
Travel time through pipe =    1.23 min.
Time of concentration (TC) =    10.18 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      1.720(Ac.)
Runoff from this stream =      4.992(CFS)
Time of concentration =   10.18 min.
Rainfall intensity =     3.109(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      203.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
Initial area flow distance =   423.000(Ft.)
Top (of initial area) elevation =   926.800(Ft.)
Bottom (of initial area) elevation =   923.200(Ft.)
Difference in elevation =     3.600(Ft.)
Slope =    0.00851  s(percent)=       0.85
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.743 min.
Rainfall intensity =      3.319(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.876
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  52.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      5.668(CFS)
Total initial stream area =        1.950(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      202.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   917.300(Ft.)
Downstream point/station elevation =   917.000(Ft.)
Pipe length  =    28.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.668(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     5.668(CFS)
Normal flow depth in pipe =   10.59(In.)
Flow top width inside pipe =   13.66(In.)
Critical Depth =   11.57(In.)
Pipe flow velocity =      6.11(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =     8.82 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      202.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      1.950(Ac.)
Runoff from this stream =      5.668(CFS)
Time of concentration =    8.82 min.
Rainfall intensity =     3.307(In/Hr)
Summary of stream data:
```

```
Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        4.992     10.18                3.109
2        5.668      8.82                3.307
Largest stream flow has longer or shorter time of concentration
Qp =      5.668 + sum of
          Qa          Tb/Ta
           4.992 *    0.866 =      4.323
Qp =      9.991

Total of 2 streams to confluence:
Flow rates before confluence point:
       4.992       5.668
Area of streams before confluence:
        1.720        1.950
Results of confluence:
Total flow rate =      9.991(CFS)
Time of concentration =     8.819 min.
Effective stream area after confluence =      3.670(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      204.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =   917.000(Ft.)
Downstream point/station elevation =   914.700(Ft.)
Pipe length  =   242.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.991(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     9.991(CFS)
Normal flow depth in pipe =   14.37(In.)
Flow top width inside pipe =   14.45(In.)
Critical Depth =   14.61(In.)
Pipe flow velocity =      6.60(Ft/s)
Travel time through pipe =    0.61 min.
Time of concentration (TC) =     9.43 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      204.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      3.670(Ac.)
Runoff from this stream =      9.991(CFS)
Time of concentration =    9.43 min.
Rainfall intensity =     3.213(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      205.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------
Initial area flow distance =   275.000(Ft.)
Top (of initial area) elevation =   923.100(Ft.)
Bottom (of initial area) elevation =   920.800(Ft.)
Difference in elevation =     2.300(Ft.)
Slope =    0.00836  s(percent)=       0.84
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.385 min.
Rainfall intensity =      3.569(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.887
Decimal fraction soil group A = 0.300
Decimal fraction soil group B = 0.700
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  68.80
Pervious area fraction =  0.100; Impervious fraction =  0.900
```

```
Initial subarea runoff =      4.495(CFS)
Total initial stream area =        1.420(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      204.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =   915.000(Ft.)
Downstream point/station elevation =   914.700(Ft.)
Pipe length  =    18.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.495(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     4.495(CFS)
Normal flow depth in pipe =    9.60(In.)
Flow top width inside pipe =    9.60(In.)
Critical Depth =   10.64(In.)
Pipe flow velocity =      6.67(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     7.43 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      204.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      1.420(Ac.)
Runoff from this stream =      4.495(CFS)
Time of concentration =    7.43 min.
Rainfall intensity =     3.560(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        9.991      9.43                3.213
2        4.495      7.43                3.560
Largest stream flow has longer time of concentration
Qp =      9.991 + sum of
          Qb         Ia/Ib
           4.495 *    0.903 =      4.057
Qp =     14.049

Total of 2 streams to confluence:
Flow rates before confluence point:
       9.991       4.495
Area of streams before confluence:
        3.670        1.420
Results of confluence:
Total flow rate =     14.049(CFS)
Time of concentration =     9.430 min.
Effective stream area after confluence =      5.090(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      206.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =   914.700(Ft.)
Downstream point/station elevation =   911.300(Ft.)
Pipe length  =   335.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.049(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    14.049(CFS)
Normal flow depth in pipe =   15.28(In.)
Flow top width inside pipe =   18.70(In.)
Critical Depth =   16.72(In.)
Pipe flow velocity =      7.49(Ft/s)
Travel time through pipe =    0.75 min.
Time of concentration (TC) =    10.18 min.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      206.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      5.090(Ac.)
Runoff from this stream =     14.049(CFS)
Time of concentration =   10.18 min.
Rainfall intensity =     3.110(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      207.000 to Point/Station      208.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
Initial area flow distance =   247.000(Ft.)
Top (of initial area) elevation =   926.500(Ft.)
Bottom (of initial area) elevation =   924.000(Ft.)
Difference in elevation =     2.500(Ft.)
Slope =    0.01012  s(percent)=       1.01
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.810 min.
Rainfall intensity =      3.696(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.878
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  52.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      3.568(CFS)
Total initial stream area =        1.100(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      209.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =   920.000(Ft.)
Downstream point/station elevation =   915.500(Ft.)
Pipe length  =   271.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.568(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     3.568(CFS)
Normal flow depth in pipe =    7.95(In.)
Flow top width inside pipe =   11.35(In.)
Critical Depth =    9.68(In.)
Pipe flow velocity =      6.46(Ft/s)
Travel time through pipe =    0.70 min.
Time of concentration (TC) =     7.51 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      209.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      1.100(Ac.)
Runoff from this stream =      3.568(CFS)
Time of concentration =    7.51 min.
Rainfall intensity =     3.544(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      211.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
```

```
Initial area flow distance =   203.000(Ft.)
Top (of initial area) elevation =   922.500(Ft.)
Bottom (of initial area) elevation =   921.600(Ft.)
Difference in elevation =     0.900(Ft.)
Slope =    0.00443  s(percent)=       0.44
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.426 min.
Rainfall intensity =      3.561(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.884
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  64.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      5.322(CFS)
Total initial stream area =        1.690(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      211.000 to Point/Station      209.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =   915.700(Ft.)
Downstream point/station elevation =   915.500(Ft.)
Pipe length  =    18.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.322(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     5.322(CFS)
Normal flow depth in pipe =    9.98(In.)
Flow top width inside pipe =   14.15(In.)
Critical Depth =   11.21(In.)
Pipe flow velocity =      6.14(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =     7.48 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      211.000 to Point/Station      209.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      1.690(Ac.)
Runoff from this stream =      5.322(CFS)
Time of concentration =    7.48 min.
Rainfall intensity =     3.551(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        3.568      7.51                3.544
2        5.322      7.48                3.551
Largest stream flow has longer or shorter time of concentration
Qp =      5.322 + sum of
          Qa          Tb/Ta
           3.568 *    0.995 =      3.551
Qp =      8.873

Total of 2 streams to confluence:
Flow rates before confluence point:
       3.568       5.322
Area of streams before confluence:
        1.100        1.690
Results of confluence:
Total flow rate =      8.873(CFS)
Time of concentration =     7.475 min.
Effective stream area after confluence =      2.790(Ac.)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      209.000 to Point/Station      206.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   915.500(Ft.)
Downstream point/station elevation =   911.300(Ft.)
Pipe length  =   177.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.873(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     8.873(CFS)
Normal flow depth in pipe =   11.04(In.)
Flow top width inside pipe =   13.22(In.)
Critical Depth =   13.82(In.)
Pipe flow velocity =      9.17(Ft/s)
Travel time through pipe =    0.32 min.
Time of concentration (TC) =     7.80 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      209.000 to Point/Station      206.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      2.790(Ac.)
Runoff from this stream =      8.873(CFS)
Time of concentration =    7.80 min.
Rainfall intensity =     3.487(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       14.049     10.18               3.110
2        8.873      7.80               3.487
Largest stream flow has longer time of concentration
Qp =     14.049 + sum of
          Qb         Ia/Ib
           8.873 *    0.892 =      7.913
Qp =     21.962

Total of 2 main streams to confluence:
Flow rates before confluence point:
      14.049       8.873
Area of streams before confluence:
        5.090        2.790


Results of confluence:
Total flow rate =     21.962(CFS)
Time of concentration =    10.176 min.
Effective stream area after confluence  =      7.880(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      212.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   911.300(Ft.)
Downstream point/station elevation =   910.000(Ft.)
Pipe length  =   126.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    21.962(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    21.962(CFS)
Normal flow depth in pipe =   18.80(In.)
Flow top width inside pipe =   19.78(In.)
Critical Depth =   20.08(In.)
Pipe flow velocity =      8.33(Ft/s)
Travel time through pipe =    0.25 min.
Time of concentration (TC) =    10.43 min.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      212.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.880(Ac.)
Runoff from this stream =     21.962(CFS)
Time of concentration =   10.43 min.
Rainfall intensity =     3.077(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      213.000 to Point/Station      214.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
Initial area flow distance =   322.000(Ft.)
Top (of initial area) elevation =   921.500(Ft.)
Bottom (of initial area) elevation =   918.700(Ft.)
Difference in elevation =     2.800(Ft.)
Slope =    0.00870  s(percent)=       0.87
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.806 min.
Rainfall intensity =      3.485(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.884
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  64.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      7.087(CFS)
Total initial stream area =        2.300(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      214.000 to Point/Station      212.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =   913.700(Ft.)
Downstream point/station elevation =   910.000(Ft.)
Pipe length  =    20.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.087(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     7.087(CFS)
Normal flow depth in pipe =    7.34(In.)
Flow top width inside pipe =    6.99(In.)
Critical depth could not be calculated.
Pipe flow velocity =     18.36(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     7.82 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      214.000 to Point/Station      212.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      2.300(Ac.)
Runoff from this stream =      7.087(CFS)
Time of concentration =    7.82 min.
Rainfall intensity =     3.482(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       21.962     10.43                3.077
2        7.087      7.82                3.482
Largest stream flow has longer time of concentration
Qp =     21.962 + sum of
```

```
          Qb         Ia/Ib
           7.087 *    0.884 =      6.263
Qp =     28.225

Total of 2 streams to confluence:
Flow rates before confluence point:
      21.962       7.087
Area of streams before confluence:
        7.880        2.300
Results of confluence:
Total flow rate =     28.225(CFS)
Time of concentration =    10.428 min.
Effective stream area after confluence =     10.180(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      212.000 to Point/Station      215.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   910.000(Ft.)
Downstream point/station elevation =   908.300(Ft.)
Pipe length  =   169.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    28.225(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    28.225(CFS)
Normal flow depth in pipe =   20.20(In.)
Flow top width inside pipe =   23.44(In.)
Critical Depth =   22.17(In.)
Pipe flow velocity =      8.85(Ft/s)
Travel time through pipe =    0.32 min.
Time of concentration (TC) =    10.75 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      212.000 to Point/Station      215.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     10.180(Ac.)
Runoff from this stream =     28.225(CFS)
Time of concentration =   10.75 min.
Rainfall intensity =     3.038(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      216.000 to Point/Station      217.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Initial area flow distance =   129.000(Ft.)
Top (of initial area) elevation =   922.500(Ft.)
Bottom (of initial area) elevation =   920.100(Ft.)
Difference in elevation =     2.400(Ft.)
Slope =    0.01860  s(percent)=       1.86
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      4.221(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.891
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  74.80
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.919(CFS)
Total initial stream area =        0.510(Ac.)
Pervious area fraction = 0.100
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      217.000 to Point/Station      218.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   914.100(Ft.)
Downstream point/station elevation =   911.800(Ft.)
Pipe length  =   315.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.919(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.919(CFS)
Normal flow depth in pipe =    6.91(In.)
Flow top width inside pipe =   11.86(In.)
Critical Depth =    7.09(In.)
Pipe flow velocity =      4.10(Ft/s)
Travel time through pipe =    1.28 min.
Time of concentration (TC) =     6.28 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      217.000 to Point/Station      218.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      0.510(Ac.)
Runoff from this stream =      1.919(CFS)
Time of concentration =    6.28 min.
Rainfall intensity =     3.827(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      217.000 to Point/Station      219.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
Initial area flow distance =   282.000(Ft.)
Top (of initial area) elevation =   920.100(Ft.)
Bottom (of initial area) elevation =   917.800(Ft.)
Difference in elevation =     2.300(Ft.)
Slope =    0.00816  s(percent)=       0.82
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.498 min.
Rainfall intensity =      3.546(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.884
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  64.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      2.603(CFS)
Total initial stream area =        0.830(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      219.000 to Point/Station      218.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   912.000(Ft.)
Downstream point/station elevation =   911.800(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.603(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     2.603(CFS)
Normal flow depth in pipe =    6.93(In.)
Flow top width inside pipe =   11.86(In.)
Critical Depth =    8.30(In.)
Pipe flow velocity =      5.54(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =     7.54 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

```
Process from Point/Station      219.000 to Point/Station      218.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      0.830(Ac.)
Runoff from this stream =      2.603(CFS)
Time of concentration =    7.54 min.
Rainfall intensity =     3.537(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        1.919      6.28                 3.827
2        2.603      7.54                 3.537
Largest stream flow has longer time of concentration
Qp =      2.603 + sum of
          Qb         Ia/Ib
           1.919 *    0.924 =      1.774
Qp =      4.376

Total of 2 streams to confluence:
Flow rates before confluence point:
       1.919       2.603
Area of streams before confluence:
        0.510        0.830
Results of confluence:
Total flow rate =      4.376(CFS)
Time of concentration =     7.543 min.
Effective stream area after confluence =      1.340(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      218.000 to Point/Station      215.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____________________________________________________________________
Upstream point/station elevation =   911.800(Ft.)
Downstream point/station elevation =   908.300(Ft.)
Pipe length  =   247.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.376(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     4.376(CFS)
Normal flow depth in pipe =    8.11(In.)
Flow top width inside pipe =   14.95(In.)
Critical Depth =   10.17(In.)
Pipe flow velocity =      6.47(Ft/s)
Travel time through pipe =    0.64 min.
Time of concentration (TC) =     8.18 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      218.000 to Point/Station      215.000
**** CONFLUENCE OF MAIN STREAMS ****
____________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      1.340(Ac.)
Runoff from this stream =      4.376(CFS)
Time of concentration =    8.18 min.
Rainfall intensity =     3.416(In/Hr)
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      219.000 to Point/Station      220.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________
Initial area flow distance =   218.000(Ft.)
Top (of initial area) elevation =   917.800(Ft.)
Bottom (of initial area) elevation =   916.800(Ft.)
Difference in elevation =     1.000(Ft.)
Slope =    0.00459  s(percent)=       0.46
```

```
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.589 min.
Rainfall intensity =      3.528(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.877
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  52.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      2.691(CFS)
Total initial stream area =        0.870(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      220.000 to Point/Station      215.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =   911.000(Ft.)
Downstream point/station elevation =   908.300(Ft.)
Pipe length  =    10.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.691(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     2.691(CFS)
Normal flow depth in pipe =    4.55(In.)
Flow top width inside pipe =    5.14(In.)
Critical depth could not be calculated.
Pipe flow velocity =     16.85(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     7.60 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      220.000 to Point/Station      215.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      0.870(Ac.)
Runoff from this stream =      2.691(CFS)
Time of concentration =    7.60 min.
Rainfall intensity =     3.526(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       28.225     10.75               3.038
2        4.376      8.18               3.416
3        2.691      7.60               3.526
Largest stream flow has longer time of concentration
Qp =     28.225 + sum of
          Qb         Ia/Ib
           4.376 *    0.889 =      3.892
          Qb         Ia/Ib
           2.691 *    0.862 =      2.318
Qp =     34.434

Total of 3 main streams to confluence:
Flow rates before confluence point:
      28.225       4.376       2.691
Area of streams before confluence:
       10.180        1.340        0.870


Results of confluence:
Total flow rate =     34.434(CFS)
Time of concentration =    10.746 min.
Effective stream area after confluence  =     12.390(Ac.)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      215.000 to Point/Station      221.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   908.300(Ft.)
Downstream point/station elevation =   895.000(Ft.)
Pipe length  =   112.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    34.434(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    34.434(CFS)
Normal flow depth in pipe =   14.02(In.)
Flow top width inside pipe =   14.95(In.)
Critical depth could not be calculated.
Pipe flow velocity =     23.31(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =    10.83 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      215.000 to Point/Station      221.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Runoff Coefficient = 0.874
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  52.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    10.83 min.
Rainfall intensity =      3.028(In/Hr) for a   100.0 year storm
Subarea runoff =      3.811(CFS) for      1.440(Ac.)
Total runoff =     38.245(CFS)       Total area =      13.830(Ac.)
End of computations, total study area =           13.83 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  40.3
```

- **Area 'B' – 2 Year 1 Hour Existing Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: exb00212.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 6407

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
EXISTING CONDITION UNIT HYDROGRAPH - 2 YEAR 1 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
Drainage Area =      15.70(Ac.)  =      0.025 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      15.70(Ac.)  =      0.025 Sq. Mi.
Length along longest watercourse =    1928.00(Ft.)
Length along longest watercourse measured to centroid =     884.00(Ft.)
Length along longest watercourse =      0.365 Mi.
Length along longest watercourse measured to centroid =      0.167 Mi.
Difference in elevation =      15.00(Ft.)
Slope along watercourse =     41.0788 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time =    0.123 Hr.
Lag time =     7.37 Min.
25% of lag time =     1.84 Min.
40% of lag time =     2.95 Min.
Unit time =     5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           0.55                 8.63

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           1.45                22.76

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    0.550(In)
Area Averaged 100-Year Rainfall =    1.450(In)

Point rain (area averaged) =    0.550(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    0.550(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    15.700           70.40         0.000
 Total Area Entered =     15.70(Ac.)
```

```
      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
      70.4  51.5      0.557     0.000        0.557       1.000      0.557
                                                       Sum (F) =   0.557
      Area averaged mean soil loss (F) (In/Hr) =  0.557
      Minimum soil loss rate ((In/Hr)) =  0.278
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.900
      ------------------------------------------------------------------------
      Slope of intensity-duration curve for a 1 hour storm =0.4800
      ------------------------------------------------------------------------

                  U n i t  H y d r o g r a p h
                         VALLEY S-Curve
      ------------------------------------------------------------------------
                  Unit Hydrograph Data
      ------------------------------------------------------------------------
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
          (hrs)                          Graph %           (CFS)
      ------------------------------------------------------------------------
          1   0.083         67.808         10.072             1.594
          2   0.167        135.617         38.920             6.158
          3   0.250        203.425         23.906             3.783
          4   0.333        271.233          9.226             1.460
          5   0.417        339.042          5.609             0.887
          6   0.500        406.850          3.758             0.595
          7   0.583        474.658          2.504             0.396
          8   0.667        542.467          1.955             0.309
          9   0.750        610.275          1.419             0.225
         10   0.833        678.083          1.025             0.162
         11   0.917        745.891          0.725             0.115
         12   1.000        813.700          0.880             0.139
                                   Sum = 100.000   Sum=      15.823
------------------------------------------------------------------------

 The following loss rate calculations reflect use of the minimum calculated loss
 rate subtracted from the Storm Rain to produce the maximum Effective Rain value

  Unit Time   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)         Max   |   Low         (In/Hr)
    1   0.08     4.40      0.290       (  0.557)       0.261        0.029
    2   0.17     4.50      0.297       (  0.557)       0.267        0.030
    3   0.25     5.40      0.356       (  0.557)       0.321        0.036
    4   0.33     5.40      0.356       (  0.557)       0.321        0.036
    5   0.42     5.70      0.376       (  0.557)       0.339        0.038
    6   0.50     6.40      0.422       (  0.557)       0.380        0.042
    7   0.58     7.90      0.521       (  0.557)       0.469        0.052
    8   0.67     9.10      0.601       (  0.557)       0.540        0.060
    9   0.75    12.80      0.845          0.557    (  0.760)       0.288
   10   0.83    25.60      1.689          0.557    (  1.520)       1.132
   11   0.92     7.90      0.521       (  0.557)       0.469        0.052
   12   1.00     4.90      0.323       (  0.557)       0.291        0.032
             (Loss Rate Not Used)
      Sum =     100.0                                   Sum =     1.8
        Flood volume = Effective rainfall      0.15(In)
         times area      15.7(Ac.)/[(In)/(Ft.)] =       0.2(Ac.Ft)
        Total soil loss =      0.40(In)
        Total soil loss =     0.520(Ac.Ft)
        Total rainfall =      0.55(In)
        Flood volume =        8675.6 Cubic Feet
        Total soil loss =       22665.0 Cubic Feet
        ------------------------------------------------------------------------
         Peak flow rate of this hydrograph =      8.351(CFS)
        ------------------------------------------------------------------------
        ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                           1 - H O U R    S T O R M
                        R u n o f f      H y d r o g r a p h
        ------------------------------------------------------------------------
                    Hydrograph in   5   Minute intervals ((CFS))

        ------------------------------------------------------------------------
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
```

```
 ------------------------------------------------------------------------
   0+ 5       0.0003      0.05  Q          |          |          |          |
   0+10       0.0019      0.23  Q          |          |          |          |
   0+15       0.0043      0.35  VQ         |          |          |          |
   0+20       0.0073      0.43  |Q         |          |          |          |
   0+25       0.0106      0.48  |QV        |          |          |          |
   0+30       0.0142      0.53  | Q        |          |          |          |
   0+35       0.0184      0.60  | QV       |          |          |          |
   0+40       0.0232      0.71  | Q V      |          |          |          |
   0+45       0.0313      1.17  |   Q V    |          |          |          |
   0+50       0.0587      3.98  |          |V   Q     |          |          |
   0+55       0.1162      8.35  |          |          |  V       |  Q       |
   1+ 0       0.1521      5.21  |          |          Q          V          |
   1+ 5       0.1686      2.40  |         Q|          |          |  V       |
   1+10       0.1785      1.44  |    Q     |          |          |    V     |
   1+15       0.1849      0.93  |  Q       |          |          |      V   |
   1+20       0.1893      0.63  | Q        |          |          |       V  |
   1+25       0.1925      0.48  |Q         |          |          |       V  |
   1+30       0.1949      0.34  |Q         |          |          |        V |
   1+35       0.1966      0.25  Q          |          |          |        V |
   1+40       0.1979      0.19  Q          |          |          |        V |
   1+45       0.1991      0.17  Q          |          |          |        V |
   1+50       0.1991      0.01  Q          |          |          |        V |
   1+55       0.1992      0.00  Q          |          |          |        V |
------------------------------------------------------------------------
```

- **Area 'B' – 2 Year 3 Hour Existing Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: exb00232.out

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6407

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format

------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
EXISTING CONDITION UNIT HYDROGRAPH - 2 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
Drainage Area =      15.70(Ac.)  =      0.025 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      15.70(Ac.)  =      0.025 Sq. Mi.
Length along longest watercourse =    1928.00(Ft.)
Length along longest watercourse measured to centroid =     884.00(Ft.)
Length along longest watercourse =      0.365 Mi.
Length along longest watercourse measured to centroid =      0.167 Mi.
Difference in elevation =      15.00(Ft.)
Slope along watercourse =     41.0788 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time =    0.123 Hr.
Lag time =     7.37 Min.
25% of lag time =     1.84 Min.
40% of lag time =     2.95 Min.
Unit time =     5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           1.00                 15.70

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           2.50                 39.25

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    1.000(In)
Area Averaged 100-Year Rainfall =    2.500(In)

Point rain (area averaged) =    1.000(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    1.000(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    15.700           70.40          0.000
 Total Area Entered =     15.70(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
70.4  51.5      0.557     0.000        0.557       1.000      0.557
                                                  Sum (F) =   0.557
Area averaged mean soil loss (F) (In/Hr) =  0.557
Minimum soil loss rate ((In/Hr)) =  0.278
```

(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	67.808	10.072	1.594
2	0.167	135.617	38.920	6.158
3	0.250	203.425	23.906	3.783
4	0.333	271.233	9.226	1.460
5	0.417	339.042	5.609	0.887
6	0.500	406.850	3.758	0.595
7	0.583	474.658	2.504	0.396
8	0.667	542.467	1.955	0.309
9	0.750	610.275	1.419	0.225
10	0.833	678.083	1.025	0.162
11	0.917	745.891	0.725	0.115
12	1.000	813.700	0.880	0.139
			Sum = 100.000	Sum= 15.823

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.156	(0.557)	0.140	0.016
2	0.17	1.30	0.156	(0.557)	0.140	0.016
3	0.25	1.10	0.132	(0.557)	0.119	0.013
4	0.33	1.50	0.180	(0.557)	0.162	0.018
5	0.42	1.50	0.180	(0.557)	0.162	0.018
6	0.50	1.80	0.216	(0.557)	0.194	0.022
7	0.58	1.50	0.180	(0.557)	0.162	0.018
8	0.67	1.80	0.216	(0.557)	0.194	0.022
9	0.75	1.80	0.216	(0.557)	0.194	0.022
10	0.83	1.50	0.180	(0.557)	0.162	0.018
11	0.92	1.60	0.192	(0.557)	0.173	0.019
12	1.00	1.80	0.216	(0.557)	0.194	0.022
13	1.08	2.20	0.264	(0.557)	0.238	0.026
14	1.17	2.20	0.264	(0.557)	0.238	0.026
15	1.25	2.20	0.264	(0.557)	0.238	0.026
16	1.33	2.00	0.240	(0.557)	0.216	0.024
17	1.42	2.60	0.312	(0.557)	0.281	0.031
18	1.50	2.70	0.324	(0.557)	0.292	0.032
19	1.58	2.40	0.288	(0.557)	0.259	0.029
20	1.67	2.70	0.324	(0.557)	0.292	0.032
21	1.75	3.30	0.396	(0.557)	0.356	0.040
22	1.83	3.10	0.372	(0.557)	0.335	0.037
23	1.92	2.90	0.348	(0.557)	0.313	0.035
24	2.00	3.00	0.360	(0.557)	0.324	0.036
25	2.08	3.10	0.372	(0.557)	0.335	0.037
26	2.17	4.20	0.504	(0.557)	0.454	0.050
27	2.25	5.00	0.600	(0.557)	0.540	0.060
28	2.33	3.50	0.420	(0.557)	0.378	0.042
29	2.42	6.80	0.816	0.557	(0.734)	0.259
30	2.50	7.30	0.876	0.557	(0.788)	0.319
31	2.58	8.20	0.984	0.557	(0.886)	0.427
32	2.67	5.90	0.708	0.557	(0.637)	0.151
33	2.75	2.00	0.240	(0.557)	0.216	0.024
34	2.83	1.80	0.216	(0.557)	0.194	0.022
35	2.92	1.80	0.216	(0.557)	0.194	0.022
36	3.00	0.60	0.072	(0.557)	0.065	0.007
		(Loss Rate Not Used)				
Sum =		100.0			Sum =	2.0

Flood volume = Effective rainfall 0.17(In)
times area 15.7(Ac.)/[(In)/(Ft.)] = 0.2(Ac.Ft)
Total soil loss = 0.83(In)

```
      Total soil loss =     1.088(Ac.Ft)
      Total rainfall =      1.00(In)
      Flood volume =        9582.5 Cubic Feet
      Total soil loss =       47404.6 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      4.586(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          3 - H O U R    S T O R M
                      R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0002      0.02  Q         |         |         |         |
   0+10       0.0010      0.12  Q         |         |         |         |
   0+15       0.0022      0.18  Q         |         |         |         |
   0+20       0.0035      0.19  Q         |         |         |         |
   0+25       0.0051      0.23  Q         |         |         |         |
   0+30       0.0069      0.26  |Q        |         |         |         |
   0+35       0.0088      0.28  |Q        |         |         |         |
   0+40       0.0108      0.29  |Q        |         |         |         |
   0+45       0.0129      0.31  |QV       |         |         |         |
   0+50       0.0151      0.32  |QV       |         |         |         |
   0+55       0.0172      0.30  |Q V      |         |         |         |
   1+ 0       0.0193      0.31  |Q V      |         |         |         |
   1+ 5       0.0216      0.33  |Q V      |         |         |         |
   1+10       0.0241      0.37  |Q  V     |         |         |         |
   1+15       0.0268      0.39  |Q  V     |         |         |         |
   1+20       0.0295      0.40  |Q   V    |         |         |         |
   1+25       0.0323      0.40  |Q   V    |         |         |         |
   1+30       0.0353      0.44  |Q    V   |         |         |         |
   1+35       0.0385      0.47  |Q     V  |         |         |         |
   1+40       0.0417      0.47  |Q     V  |         |         |         |
   1+45       0.0451      0.49  |Q      V |         |         |         |
   1+50       0.0489      0.55  | Q     V |         |         |         |
   1+55       0.0528      0.56  | Q      V|         |         |         |
   2+ 0       0.0566      0.56  | Q       V         |         |         |
   2+ 5       0.0605      0.56  | Q       V         |         |         |
   2+10       0.0646      0.59  | Q       |V        |         |         |
   2+15       0.0694      0.70  | Q       | V       |         |         |
   2+20       0.0748      0.78  |  Q      |  V      |         |         |
   2+25       0.0822      1.07  |   Q     |   V     |         |         |
   2+30       0.0991      2.47  |        Q|       V |         |         |
   2+35       0.1254      3.82  |         |    Q    | V       |         |
   2+40       0.1570      4.59  |         |       Q |       V |         |
   2+45       0.1802      3.37  |         |  Q      |         | V       |
   2+50       0.1932      1.88  |      Q  |         |         |    V    |
   2+55       0.2014      1.19  |   Q     |         |         |     V   |
   3+ 0       0.2075      0.89  |  Q      |         |         |      V  |
   3+ 5       0.2117      0.62  | Q       |         |         |       V |
   3+10       0.2146      0.41  |Q        |         |         |        V|
   3+15       0.2165      0.28  |Q        |         |         |        V|
   3+20       0.2180      0.21  Q         |         |         |        V|
   3+25       0.2189      0.14  Q         |         |         |        V|
   3+30       0.2196      0.10  Q         |         |         |        V|
   3+35       0.2198      0.03  Q         |         |         |        V|
   3+40       0.2199      0.01  Q         |         |         |        V|
   3+45       0.2200      0.01  Q         |         |         |        V|
   3+50       0.2200      0.00  Q         |         |         |        V|
   3+55       0.2200      0.00  Q         |         |         |         V
------------------------------------------------------------------------
```

- **Area 'B' – 2 Year 6 Hour Existing Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: exb00262.out

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
----------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6407

----------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format

----------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
EXISTING CONDITION UNIT HYDROGRAPH - 2 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
----------------------------------------------------------------------
Drainage Area =      15.70(Ac.)  =      0.025 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      15.70(Ac.)  =      0.025 Sq. Mi.
Length along longest watercourse =    1928.00(Ft.)
Length along longest watercourse measured to centroid =     884.00(Ft.)
Length along longest watercourse =      0.365 Mi.
Length along longest watercourse measured to centroid =      0.167 Mi.
Difference in elevation =      15.00(Ft.)
Slope along watercourse =     41.0788 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time =    0.123 Hr.
Lag time =     7.37 Min.
25% of lag time =     1.84 Min.
40% of lag time =     2.95 Min.
Unit time =     5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           1.40                 21.98

100 YEAR Area rainfall data:

Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           3.00                 47.10

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    1.400(In)
Area Averaged 100-Year Rainfall =    3.000(In)

Point rain (area averaged) =    1.400(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    1.400(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    15.700           70.40         0.000
 Total Area Entered =     15.70(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
70.4  51.5      0.557     0.000        0.557       1.000      0.557
                                                 Sum (F) =   0.557
Area averaged mean soil loss (F) (In/Hr) =  0.557
Minimum soil loss rate ((In/Hr)) =  0.278
(for 24 hour storm duration)
```

Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	67.808	10.072	1.594
2	0.167	135.617	38.920	6.158
3	0.250	203.425	23.906	3.783
4	0.333	271.233	9.226	1.460
5	0.417	339.042	5.609	0.887
6	0.500	406.850	3.758	0.595
7	0.583	474.658	2.504	0.396
8	0.667	542.467	1.955	0.309
9	0.750	610.275	1.419	0.225
10	0.833	678.083	1.025	0.162
11	0.917	745.891	0.725	0.115
12	1.000	813.700	0.880	0.139
			Sum = 100.000	Sum= 15.823

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.084	(0.557)	0.076	0.008
2	0.17	0.60	0.101	(0.557)	0.091	0.010
3	0.25	0.60	0.101	(0.557)	0.091	0.010
4	0.33	0.60	0.101	(0.557)	0.091	0.010
5	0.42	0.60	0.101	(0.557)	0.091	0.010
6	0.50	0.70	0.118	(0.557)	0.106	0.012
7	0.58	0.70	0.118	(0.557)	0.106	0.012
8	0.67	0.70	0.118	(0.557)	0.106	0.012
9	0.75	0.70	0.118	(0.557)	0.106	0.012
10	0.83	0.70	0.118	(0.557)	0.106	0.012
11	0.92	0.70	0.118	(0.557)	0.106	0.012
12	1.00	0.80	0.134	(0.557)	0.121	0.013
13	1.08	0.80	0.134	(0.557)	0.121	0.013
14	1.17	0.80	0.134	(0.557)	0.121	0.013
15	1.25	0.80	0.134	(0.557)	0.121	0.013
16	1.33	0.80	0.134	(0.557)	0.121	0.013
17	1.42	0.80	0.134	(0.557)	0.121	0.013
18	1.50	0.80	0.134	(0.557)	0.121	0.013
19	1.58	0.80	0.134	(0.557)	0.121	0.013
20	1.67	0.80	0.134	(0.557)	0.121	0.013
21	1.75	0.80	0.134	(0.557)	0.121	0.013
22	1.83	0.80	0.134	(0.557)	0.121	0.013
23	1.92	0.80	0.134	(0.557)	0.121	0.013
24	2.00	0.90	0.151	(0.557)	0.136	0.015
25	2.08	0.80	0.134	(0.557)	0.121	0.013
26	2.17	0.90	0.151	(0.557)	0.136	0.015
27	2.25	0.90	0.151	(0.557)	0.136	0.015
28	2.33	0.90	0.151	(0.557)	0.136	0.015
29	2.42	0.90	0.151	(0.557)	0.136	0.015
30	2.50	0.90	0.151	(0.557)	0.136	0.015
31	2.58	0.90	0.151	(0.557)	0.136	0.015
32	2.67	0.90	0.151	(0.557)	0.136	0.015
33	2.75	1.00	0.168	(0.557)	0.151	0.017
34	2.83	1.00	0.168	(0.557)	0.151	0.017
35	2.92	1.00	0.168	(0.557)	0.151	0.017
36	3.00	1.00	0.168	(0.557)	0.151	0.017
37	3.08	1.00	0.168	(0.557)	0.151	0.017
38	3.17	1.10	0.185	(0.557)	0.166	0.018
39	3.25	1.10	0.185	(0.557)	0.166	0.018
40	3.33	1.10	0.185	(0.557)	0.166	0.018
41	3.42	1.20	0.202	(0.557)	0.181	0.020

```
 42   3.50     1.30      0.218       (  0.557)       0.197        0.022
 43   3.58     1.40      0.235       (  0.557)       0.212        0.024
 44   3.67     1.40      0.235       (  0.557)       0.212        0.024
 45   3.75     1.50      0.252       (  0.557)       0.227        0.025
 46   3.83     1.50      0.252       (  0.557)       0.227        0.025
 47   3.92     1.60      0.269       (  0.557)       0.242        0.027
 48   4.00     1.60      0.269       (  0.557)       0.242        0.027
 49   4.08     1.70      0.286       (  0.557)       0.257        0.029
 50   4.17     1.80      0.302       (  0.557)       0.272        0.030
 51   4.25     1.90      0.319       (  0.557)       0.287        0.032
 52   4.33     2.00      0.336       (  0.557)       0.302        0.034
 53   4.42     2.10      0.353       (  0.557)       0.318        0.035
 54   4.50     2.10      0.353       (  0.557)       0.318        0.035
 55   4.58     2.20      0.370       (  0.557)       0.333        0.037
 56   4.67     2.30      0.386       (  0.557)       0.348        0.039
 57   4.75     2.40      0.403       (  0.557)       0.363        0.040
 58   4.83     2.40      0.403       (  0.557)       0.363        0.040
 59   4.92     2.50      0.420       (  0.557)       0.378        0.042
 60   5.00     2.60      0.437       (  0.557)       0.393        0.044
 61   5.08     3.10      0.521       (  0.557)       0.469        0.052
 62   5.17     3.60      0.605       (  0.557)       0.544        0.060
 63   5.25     3.90      0.655          0.557    (  0.590)       0.098
 64   5.33     4.20      0.706          0.557    (  0.635)       0.149
 65   5.42     4.70      0.790          0.557    (  0.711)       0.233
 66   5.50     5.60      0.941          0.557    (  0.847)       0.384
 67   5.58     1.90      0.319       (  0.557)       0.287        0.032
 68   5.67     0.90      0.151       (  0.557)       0.136        0.015
 69   5.75     0.60      0.101       (  0.557)       0.091        0.010
 70   5.83     0.50      0.084       (  0.557)       0.076        0.008
 71   5.92     0.30      0.050       (  0.557)       0.045        0.005
 72   6.00     0.20      0.034       (  0.557)       0.030        0.003
            (Loss Rate Not Used)
   Sum =     100.0                                    Sum =     2.2
     Flood volume = Effective rainfall      0.19(In)
      times area      15.7(Ac.)/[(In)/(Ft.)] =       0.2(Ac.Ft)
     Total soil loss =      1.21(In)
     Total soil loss =     1.588(Ac.Ft)
     Total rainfall =      1.40(In)
     Flood volume =       10610.9 Cubic Feet
     Total soil loss =       69172.2 Cubic Feet
     ---------------------------------------------------------------------
      Peak flow rate of this hydrograph =      3.697(CFS)
     ---------------------------------------------------------------------
     +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                         6 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
     ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

     ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
-------------------------------------------------------------------------
  0+ 5       0.0001      0.01  Q         |         |         |         |
  0+10       0.0006      0.07  Q         |         |         |         |
  0+15       0.0013      0.11  Q         |         |         |         |
  0+20       0.0022      0.13  Q         |         |         |         |
  0+25       0.0032      0.14  Q         |         |         |         |
  0+30       0.0042      0.15  Q         |         |         |         |
  0+35       0.0053      0.16  Q         |         |         |         |
  0+40       0.0065      0.17  QV        |         |         |         |
  0+45       0.0077      0.18  QV        |         |         |         |
  0+50       0.0089      0.18  QV        |         |         |         |
  0+55       0.0102      0.18  QV        |         |         |         |
  1+ 0       0.0115      0.19  QV        |         |         |         |
  1+ 5       0.0128      0.20  Q V       |         |         |         |
  1+10       0.0143      0.20  Q V       |         |         |         |
  1+15       0.0157      0.21  Q V       |         |         |         |
  1+20       0.0171      0.21  Q V       |         |         |         |
  1+25       0.0186      0.21  Q  V      |         |         |         |
  1+30       0.0200      0.21  Q  V      |         |         |         |
  1+35       0.0215      0.21  Q  V      |         |         |         |
  1+40       0.0229      0.21  Q  V      |         |         |         |
  1+45       0.0244      0.21  Q   V     |         |         |         |
```

```
   1+50       0.0259      0.21  Q   V     |          |          |          |
   1+55       0.0273      0.21  Q   V     |          |          |          |
   2+ 0       0.0288      0.22  Q   V     |          |          |          |
   2+ 5       0.0304      0.22  Q   V     |          |          |          |
   2+10       0.0319      0.22  Q    V    |          |          |          |
   2+15       0.0335      0.23  Q    V    |          |          |          |
   2+20       0.0351      0.23  Q    V    |          |          |          |
   2+25       0.0367      0.24  Q     V   |          |          |          |
   2+30       0.0383      0.24  Q     V   |          |          |          |
   2+35       0.0400      0.24  Q     V   |          |          |          |
   2+40       0.0416      0.24  Q     V   |          |          |          |
   2+45       0.0433      0.24  Q      V  |          |          |          |
   2+50       0.0450      0.25  |Q     V  |          |          |          |
   2+55       0.0468      0.26  |Q     V  |          |          |          |
   3+ 0       0.0486      0.26  |Q     V  |          |          |          |
   3+ 5       0.0504      0.26  |Q      V |          |          |          |
   3+10       0.0522      0.27  |Q      V |          |          |          |
   3+15       0.0541      0.28  |Q      V |          |          |          |
   3+20       0.0561      0.28  |Q       V|          |          |          |
   3+25       0.0581      0.29  |Q       V|          |          |          |
   3+30       0.0602      0.30  |Q       V|          |          |          |
   3+35       0.0624      0.33  |Q        V          |          |          |
   3+40       0.0648      0.35  |Q        V          |          |          |
   3+45       0.0673      0.36  |Q         |V         |          |          |
   3+50       0.0698      0.37  |Q         |V         |          |          |
   3+55       0.0725      0.39  |Q         |V         |          |          |
   4+ 0       0.0753      0.40  |Q         | V        |          |          |
   4+ 5       0.0781      0.41  |Q         | V        |          |          |
   4+10       0.0811      0.43  |Q         |  V       |          |          |
   4+15       0.0842      0.45  |Q         |  V       |          |          |
   4+20       0.0875      0.48  |Q         |   V      |          |          |
   4+25       0.0910      0.50  | Q        |   V      |          |          |
   4+30       0.0946      0.53  | Q        |    V     |          |          |
   4+35       0.0983      0.54  | Q        |     V    |          |          |
   4+40       0.1022      0.56  | Q        |     V    |          |          |
   4+45       0.1062      0.58  | Q        |      V   |          |          |
   4+50       0.1104      0.61  | Q        |       V  |          |          |
   4+55       0.1147      0.62  | Q        |       V  |          |          |
   5+ 0       0.1191      0.64  | Q        |        V|          |          |
   5+ 5       0.1238      0.68  | Q        |         V          |          |
   5+10       0.1289      0.75  |  Q       |          |V         |          |
   5+15       0.1352      0.90  |  Q       |          | V        |          |
   5+20       0.1439      1.26  |    Q     |          |  V       |          |
   5+25       0.1568      1.87  |      Q   |          |    V     |          |
   5+30       0.1767      2.89  |          |Q         |       V  |          |
   5+35       0.2021      3.70  |          |   Q      |          |  V       |
   5+40       0.2178      2.27  |          |Q         |          |    V     |
   5+45       0.2258      1.17  |   Q      |          |          |      V   |
   5+50       0.2312      0.78  |  Q       |          |          |      V   |
   5+55       0.2351      0.56  | Q        |          |          |       V  |
   6+ 0       0.2378      0.40  |Q         |          |          |        V|
   6+ 5       0.2399      0.30  |Q         |          |          |        V|
   6+10       0.2413      0.20  Q          |          |          |        V|
   6+15       0.2423      0.14  Q          |          |          |        V|
   6+20       0.2429      0.10  Q          |          |          |        V|
   6+25       0.2434      0.07  Q          |          |          |        V|
   6+30       0.2435      0.01  Q          |          |          |        V|
   6+35       0.2435      0.01  Q          |          |          |        V|
   6+40       0.2436      0.00  Q          |          |          |        V|
   6+45       0.2436      0.00  Q          |          |          |        V|
   6+50       0.2436      0.00  Q          |          |          |        V|
   6+55       0.2436      0.00  Q          |          |          |         V
------------------------------------------------------------------------
```

- **Area 'B' – 2 Year 24 Hour Existing Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: exb002242.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 6407

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
EXISTING CONDITION UNIT HYDROGRAPH - 2 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
Drainage Area =      15.70(Ac.)  =      0.025 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      15.70(Ac.)  =      0.025 Sq. Mi.
Length along longest watercourse =    1928.00(Ft.)
Length along longest watercourse measured to centroid =     884.00(Ft.)
Length along longest watercourse =      0.365 Mi.
Length along longest watercourse measured to centroid =      0.167 Mi.
Difference in elevation =      15.00(Ft.)
Slope along watercourse =     41.0788 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time =    0.123 Hr.
Lag time =     7.37 Min.
25% of lag time =     1.84 Min.
40% of lag time =     2.95 Min.
Unit time =     5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           2.50                 39.25

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           8.00                125.60

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    2.500(In)
Area Averaged 100-Year Rainfall =    8.000(In)

Point rain (area averaged) =    2.500(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    2.500(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    15.700          70.40         0.000
 Total Area Entered =     15.70(Ac.)
```

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
70.4	51.5	0.557	0.000	0.557	1.000	0.557
					Sum (F) =	0.557

Area averaged mean soil loss (F) (In/Hr) = 0.557
Minimum soil loss rate ((In/Hr)) = 0.278
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	67.808	10.072	1.594
2	0.167	135.617	38.920	6.158
3	0.250	203.425	23.906	3.783
4	0.333	271.233	9.226	1.460
5	0.417	339.042	5.609	0.887
6	0.500	406.850	3.758	0.595
7	0.583	474.658	2.504	0.396
8	0.667	542.467	1.955	0.309
9	0.750	610.275	1.419	0.225
10	0.833	678.083	1.025	0.162
11	0.917	745.891	0.725	0.115
12	1.000	813.700	0.880	0.139
			Sum = 100.000	Sum= 15.823

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1	0.08	0.07	0.020	(0.987)		0.018	0.002
2	0.17	0.07	0.020	(0.983)		0.018	0.002
3	0.25	0.07	0.020	(0.980)		0.018	0.002
4	0.33	0.10	0.030	(0.976)		0.027	0.003
5	0.42	0.10	0.030	(0.972)		0.027	0.003
6	0.50	0.10	0.030	(0.968)		0.027	0.003
7	0.58	0.10	0.030	(0.964)		0.027	0.003
8	0.67	0.10	0.030	(0.961)		0.027	0.003
9	0.75	0.10	0.030	(0.957)		0.027	0.003
10	0.83	0.13	0.040	(0.953)		0.036	0.004
11	0.92	0.13	0.040	(0.949)		0.036	0.004
12	1.00	0.13	0.040	(0.946)		0.036	0.004
13	1.08	0.10	0.030	(0.942)		0.027	0.003
14	1.17	0.10	0.030	(0.938)		0.027	0.003
15	1.25	0.10	0.030	(0.934)		0.027	0.003
16	1.33	0.10	0.030	(0.931)		0.027	0.003
17	1.42	0.10	0.030	(0.927)		0.027	0.003
18	1.50	0.10	0.030	(0.923)		0.027	0.003
19	1.58	0.10	0.030	(0.920)		0.027	0.003
20	1.67	0.10	0.030	(0.916)		0.027	0.003
21	1.75	0.10	0.030	(0.912)		0.027	0.003
22	1.83	0.13	0.040	(0.909)		0.036	0.004
23	1.92	0.13	0.040	(0.905)		0.036	0.004
24	2.00	0.13	0.040	(0.901)		0.036	0.004
25	2.08	0.13	0.040	(0.898)		0.036	0.004
26	2.17	0.13	0.040	(0.894)		0.036	0.004
27	2.25	0.13	0.040	(0.890)		0.036	0.004
28	2.33	0.13	0.040	(0.887)		0.036	0.004
29	2.42	0.13	0.040	(0.883)		0.036	0.004
30	2.50	0.13	0.040	(0.880)		0.036	0.004
31	2.58	0.17	0.050	(0.876)		0.045	0.005
32	2.67	0.17	0.050	(0.872)		0.045	0.005
33	2.75	0.17	0.050	(0.869)		0.045	0.005
34	2.83	0.17	0.050	(0.865)		0.045	0.005

35	2.92	0.17	0.050	(0.862)	0.045	0.005
36	3.00	0.17	0.050	(0.858)	0.045	0.005
37	3.08	0.17	0.050	(0.855)	0.045	0.005
38	3.17	0.17	0.050	(0.851)	0.045	0.005
39	3.25	0.17	0.050	(0.847)	0.045	0.005
40	3.33	0.17	0.050	(0.844)	0.045	0.005
41	3.42	0.17	0.050	(0.840)	0.045	0.005
42	3.50	0.17	0.050	(0.837)	0.045	0.005
43	3.58	0.17	0.050	(0.833)	0.045	0.005
44	3.67	0.17	0.050	(0.830)	0.045	0.005
45	3.75	0.17	0.050	(0.826)	0.045	0.005
46	3.83	0.20	0.060	(0.823)	0.054	0.006
47	3.92	0.20	0.060	(0.819)	0.054	0.006
48	4.00	0.20	0.060	(0.816)	0.054	0.006
49	4.08	0.20	0.060	(0.812)	0.054	0.006
50	4.17	0.20	0.060	(0.809)	0.054	0.006
51	4.25	0.20	0.060	(0.806)	0.054	0.006
52	4.33	0.23	0.070	(0.802)	0.063	0.007
53	4.42	0.23	0.070	(0.799)	0.063	0.007
54	4.50	0.23	0.070	(0.795)	0.063	0.007
55	4.58	0.23	0.070	(0.792)	0.063	0.007
56	4.67	0.23	0.070	(0.788)	0.063	0.007
57	4.75	0.23	0.070	(0.785)	0.063	0.007
58	4.83	0.27	0.080	(0.782)	0.072	0.008
59	4.92	0.27	0.080	(0.778)	0.072	0.008
60	5.00	0.27	0.080	(0.775)	0.072	0.008
61	5.08	0.20	0.060	(0.772)	0.054	0.006
62	5.17	0.20	0.060	(0.768)	0.054	0.006
63	5.25	0.20	0.060	(0.765)	0.054	0.006
64	5.33	0.23	0.070	(0.762)	0.063	0.007
65	5.42	0.23	0.070	(0.758)	0.063	0.007
66	5.50	0.23	0.070	(0.755)	0.063	0.007
67	5.58	0.27	0.080	(0.752)	0.072	0.008
68	5.67	0.27	0.080	(0.748)	0.072	0.008
69	5.75	0.27	0.080	(0.745)	0.072	0.008
70	5.83	0.27	0.080	(0.742)	0.072	0.008
71	5.92	0.27	0.080	(0.738)	0.072	0.008
72	6.00	0.27	0.080	(0.735)	0.072	0.008
73	6.08	0.30	0.090	(0.732)	0.081	0.009
74	6.17	0.30	0.090	(0.729)	0.081	0.009
75	6.25	0.30	0.090	(0.725)	0.081	0.009
76	6.33	0.30	0.090	(0.722)	0.081	0.009
77	6.42	0.30	0.090	(0.719)	0.081	0.009
78	6.50	0.30	0.090	(0.716)	0.081	0.009
79	6.58	0.33	0.100	(0.712)	0.090	0.010
80	6.67	0.33	0.100	(0.709)	0.090	0.010
81	6.75	0.33	0.100	(0.706)	0.090	0.010
82	6.83	0.33	0.100	(0.703)	0.090	0.010
83	6.92	0.33	0.100	(0.700)	0.090	0.010
84	7.00	0.33	0.100	(0.696)	0.090	0.010
85	7.08	0.33	0.100	(0.693)	0.090	0.010
86	7.17	0.33	0.100	(0.690)	0.090	0.010
87	7.25	0.33	0.100	(0.687)	0.090	0.010
88	7.33	0.37	0.110	(0.684)	0.099	0.011
89	7.42	0.37	0.110	(0.681)	0.099	0.011
90	7.50	0.37	0.110	(0.678)	0.099	0.011
91	7.58	0.40	0.120	(0.675)	0.108	0.012
92	7.67	0.40	0.120	(0.671)	0.108	0.012
93	7.75	0.40	0.120	(0.668)	0.108	0.012
94	7.83	0.43	0.130	(0.665)	0.117	0.013
95	7.92	0.43	0.130	(0.662)	0.117	0.013
96	8.00	0.43	0.130	(0.659)	0.117	0.013
97	8.08	0.50	0.150	(0.656)	0.135	0.015
98	8.17	0.50	0.150	(0.653)	0.135	0.015
99	8.25	0.50	0.150	(0.650)	0.135	0.015
100	8.33	0.50	0.150	(0.647)	0.135	0.015
101	8.42	0.50	0.150	(0.644)	0.135	0.015
102	8.50	0.50	0.150	(0.641)	0.135	0.015
103	8.58	0.53	0.160	(0.638)	0.144	0.016
104	8.67	0.53	0.160	(0.635)	0.144	0.016
105	8.75	0.53	0.160	(0.632)	0.144	0.016
106	8.83	0.57	0.170	(0.629)	0.153	0.017
107	8.92	0.57	0.170	(0.626)	0.153	0.017

108	9.00	0.57	0.170	(0.623)	0.153	0.017
109	9.08	0.63	0.190	(0.620)	0.171	0.019
110	9.17	0.63	0.190	(0.617)	0.171	0.019
111	9.25	0.63	0.190	(0.614)	0.171	0.019
112	9.33	0.67	0.200	(0.611)	0.180	0.020
113	9.42	0.67	0.200	(0.608)	0.180	0.020
114	9.50	0.67	0.200	(0.605)	0.180	0.020
115	9.58	0.70	0.210	(0.602)	0.189	0.021
116	9.67	0.70	0.210	(0.600)	0.189	0.021
117	9.75	0.70	0.210	(0.597)	0.189	0.021
118	9.83	0.73	0.220	(0.594)	0.198	0.022
119	9.92	0.73	0.220	(0.591)	0.198	0.022
120	10.00	0.73	0.220	(0.588)	0.198	0.022
121	10.08	0.50	0.150	(0.585)	0.135	0.015
122	10.17	0.50	0.150	(0.582)	0.135	0.015
123	10.25	0.50	0.150	(0.580)	0.135	0.015
124	10.33	0.50	0.150	(0.577)	0.135	0.015
125	10.42	0.50	0.150	(0.574)	0.135	0.015
126	10.50	0.50	0.150	(0.571)	0.135	0.015
127	10.58	0.67	0.200	(0.568)	0.180	0.020
128	10.67	0.67	0.200	(0.566)	0.180	0.020
129	10.75	0.67	0.200	(0.563)	0.180	0.020
130	10.83	0.67	0.200	(0.560)	0.180	0.020
131	10.92	0.67	0.200	(0.557)	0.180	0.020
132	11.00	0.67	0.200	(0.555)	0.180	0.020
133	11.08	0.63	0.190	(0.552)	0.171	0.019
134	11.17	0.63	0.190	(0.549)	0.171	0.019
135	11.25	0.63	0.190	(0.546)	0.171	0.019
136	11.33	0.63	0.190	(0.544)	0.171	0.019
137	11.42	0.63	0.190	(0.541)	0.171	0.019
138	11.50	0.63	0.190	(0.538)	0.171	0.019
139	11.58	0.57	0.170	(0.536)	0.153	0.017
140	11.67	0.57	0.170	(0.533)	0.153	0.017
141	11.75	0.57	0.170	(0.530)	0.153	0.017
142	11.83	0.60	0.180	(0.528)	0.162	0.018
143	11.92	0.60	0.180	(0.525)	0.162	0.018
144	12.00	0.60	0.180	(0.522)	0.162	0.018
145	12.08	0.83	0.250	(0.520)	0.225	0.025
146	12.17	0.83	0.250	(0.517)	0.225	0.025
147	12.25	0.83	0.250	(0.515)	0.225	0.025
148	12.33	0.87	0.260	(0.512)	0.234	0.026
149	12.42	0.87	0.260	(0.510)	0.234	0.026
150	12.50	0.87	0.260	(0.507)	0.234	0.026
151	12.58	0.93	0.280	(0.504)	0.252	0.028
152	12.67	0.93	0.280	(0.502)	0.252	0.028
153	12.75	0.93	0.280	(0.499)	0.252	0.028
154	12.83	0.97	0.290	(0.497)	0.261	0.029
155	12.92	0.97	0.290	(0.494)	0.261	0.029
156	13.00	0.97	0.290	(0.492)	0.261	0.029
157	13.08	1.13	0.340	(0.489)	0.306	0.034
158	13.17	1.13	0.340	(0.487)	0.306	0.034
159	13.25	1.13	0.340	(0.484)	0.306	0.034
160	13.33	1.13	0.340	(0.482)	0.306	0.034
161	13.42	1.13	0.340	(0.479)	0.306	0.034
162	13.50	1.13	0.340	(0.477)	0.306	0.034
163	13.58	0.77	0.230	(0.475)	0.207	0.023
164	13.67	0.77	0.230	(0.472)	0.207	0.023
165	13.75	0.77	0.230	(0.470)	0.207	0.023
166	13.83	0.77	0.230	(0.467)	0.207	0.023
167	13.92	0.77	0.230	(0.465)	0.207	0.023
168	14.00	0.77	0.230	(0.463)	0.207	0.023
169	14.08	0.90	0.270	(0.460)	0.243	0.027
170	14.17	0.90	0.270	(0.458)	0.243	0.027
171	14.25	0.90	0.270	(0.456)	0.243	0.027
172	14.33	0.87	0.260	(0.453)	0.234	0.026
173	14.42	0.87	0.260	(0.451)	0.234	0.026
174	14.50	0.87	0.260	(0.449)	0.234	0.026
175	14.58	0.87	0.260	(0.446)	0.234	0.026
176	14.67	0.87	0.260	(0.444)	0.234	0.026
177	14.75	0.87	0.260	(0.442)	0.234	0.026
178	14.83	0.83	0.250	(0.439)	0.225	0.025
179	14.92	0.83	0.250	(0.437)	0.225	0.025
180	15.00	0.83	0.250	(0.435)	0.225	0.025

181	15.08	0.80	0.240	(0.433)	0.216	0.024
182	15.17	0.80	0.240	(0.431)	0.216	0.024
183	15.25	0.80	0.240	(0.428)	0.216	0.024
184	15.33	0.77	0.230	(0.426)	0.207	0.023
185	15.42	0.77	0.230	(0.424)	0.207	0.023
186	15.50	0.77	0.230	(0.422)	0.207	0.023
187	15.58	0.63	0.190	(0.420)	0.171	0.019
188	15.67	0.63	0.190	(0.417)	0.171	0.019
189	15.75	0.63	0.190	(0.415)	0.171	0.019
190	15.83	0.63	0.190	(0.413)	0.171	0.019
191	15.92	0.63	0.190	(0.411)	0.171	0.019
192	16.00	0.63	0.190	(0.409)	0.171	0.019
193	16.08	0.13	0.040	(0.407)	0.036	0.004
194	16.17	0.13	0.040	(0.405)	0.036	0.004
195	16.25	0.13	0.040	(0.403)	0.036	0.004
196	16.33	0.13	0.040	(0.401)	0.036	0.004
197	16.42	0.13	0.040	(0.399)	0.036	0.004
198	16.50	0.13	0.040	(0.397)	0.036	0.004
199	16.58	0.10	0.030	(0.395)	0.027	0.003
200	16.67	0.10	0.030	(0.393)	0.027	0.003
201	16.75	0.10	0.030	(0.391)	0.027	0.003
202	16.83	0.10	0.030	(0.389)	0.027	0.003
203	16.92	0.10	0.030	(0.387)	0.027	0.003
204	17.00	0.10	0.030	(0.385)	0.027	0.003
205	17.08	0.17	0.050	(0.383)	0.045	0.005
206	17.17	0.17	0.050	(0.381)	0.045	0.005
207	17.25	0.17	0.050	(0.379)	0.045	0.005
208	17.33	0.17	0.050	(0.377)	0.045	0.005
209	17.42	0.17	0.050	(0.375)	0.045	0.005
210	17.50	0.17	0.050	(0.373)	0.045	0.005
211	17.58	0.17	0.050	(0.371)	0.045	0.005
212	17.67	0.17	0.050	(0.370)	0.045	0.005
213	17.75	0.17	0.050	(0.368)	0.045	0.005
214	17.83	0.13	0.040	(0.366)	0.036	0.004
215	17.92	0.13	0.040	(0.364)	0.036	0.004
216	18.00	0.13	0.040	(0.362)	0.036	0.004
217	18.08	0.13	0.040	(0.360)	0.036	0.004
218	18.17	0.13	0.040	(0.359)	0.036	0.004
219	18.25	0.13	0.040	(0.357)	0.036	0.004
220	18.33	0.13	0.040	(0.355)	0.036	0.004
221	18.42	0.13	0.040	(0.353)	0.036	0.004
222	18.50	0.13	0.040	(0.352)	0.036	0.004
223	18.58	0.10	0.030	(0.350)	0.027	0.003
224	18.67	0.10	0.030	(0.348)	0.027	0.003
225	18.75	0.10	0.030	(0.347)	0.027	0.003
226	18.83	0.07	0.020	(0.345)	0.018	0.002
227	18.92	0.07	0.020	(0.343)	0.018	0.002
228	19.00	0.07	0.020	(0.342)	0.018	0.002
229	19.08	0.10	0.030	(0.340)	0.027	0.003
230	19.17	0.10	0.030	(0.339)	0.027	0.003
231	19.25	0.10	0.030	(0.337)	0.027	0.003
232	19.33	0.13	0.040	(0.335)	0.036	0.004
233	19.42	0.13	0.040	(0.334)	0.036	0.004
234	19.50	0.13	0.040	(0.332)	0.036	0.004
235	19.58	0.10	0.030	(0.331)	0.027	0.003
236	19.67	0.10	0.030	(0.329)	0.027	0.003
237	19.75	0.10	0.030	(0.328)	0.027	0.003
238	19.83	0.07	0.020	(0.326)	0.018	0.002
239	19.92	0.07	0.020	(0.325)	0.018	0.002
240	20.00	0.07	0.020	(0.323)	0.018	0.002
241	20.08	0.10	0.030	(0.322)	0.027	0.003
242	20.17	0.10	0.030	(0.321)	0.027	0.003
243	20.25	0.10	0.030	(0.319)	0.027	0.003
244	20.33	0.10	0.030	(0.318)	0.027	0.003
245	20.42	0.10	0.030	(0.316)	0.027	0.003
246	20.50	0.10	0.030	(0.315)	0.027	0.003
247	20.58	0.10	0.030	(0.314)	0.027	0.003
248	20.67	0.10	0.030	(0.312)	0.027	0.003
249	20.75	0.10	0.030	(0.311)	0.027	0.003
250	20.83	0.07	0.020	(0.310)	0.018	0.002
251	20.92	0.07	0.020	(0.309)	0.018	0.002
252	21.00	0.07	0.020	(0.307)	0.018	0.002
253	21.08	0.10	0.030	(0.306)	0.027	0.003

```
254  21.17     0.10      0.030       (  0.305)       0.027        0.003
255  21.25     0.10      0.030       (  0.304)       0.027        0.003
256  21.33     0.07      0.020       (  0.303)       0.018        0.002
257  21.42     0.07      0.020       (  0.301)       0.018        0.002
258  21.50     0.07      0.020       (  0.300)       0.018        0.002
259  21.58     0.10      0.030       (  0.299)       0.027        0.003
260  21.67     0.10      0.030       (  0.298)       0.027        0.003
261  21.75     0.10      0.030       (  0.297)       0.027        0.003
262  21.83     0.07      0.020       (  0.296)       0.018        0.002
263  21.92     0.07      0.020       (  0.295)       0.018        0.002
264  22.00     0.07      0.020       (  0.294)       0.018        0.002
265  22.08     0.10      0.030       (  0.293)       0.027        0.003
266  22.17     0.10      0.030       (  0.292)       0.027        0.003
267  22.25     0.10      0.030       (  0.291)       0.027        0.003
268  22.33     0.07      0.020       (  0.290)       0.018        0.002
269  22.42     0.07      0.020       (  0.289)       0.018        0.002
270  22.50     0.07      0.020       (  0.289)       0.018        0.002
271  22.58     0.07      0.020       (  0.288)       0.018        0.002
272  22.67     0.07      0.020       (  0.287)       0.018        0.002
273  22.75     0.07      0.020       (  0.286)       0.018        0.002
274  22.83     0.07      0.020       (  0.285)       0.018        0.002
275  22.92     0.07      0.020       (  0.285)       0.018        0.002
276  23.00     0.07      0.020       (  0.284)       0.018        0.002
277  23.08     0.07      0.020       (  0.283)       0.018        0.002
278  23.17     0.07      0.020       (  0.283)       0.018        0.002
279  23.25     0.07      0.020       (  0.282)       0.018        0.002
280  23.33     0.07      0.020       (  0.281)       0.018        0.002
281  23.42     0.07      0.020       (  0.281)       0.018        0.002
282  23.50     0.07      0.020       (  0.280)       0.018        0.002
283  23.58     0.07      0.020       (  0.280)       0.018        0.002
284  23.67     0.07      0.020       (  0.280)       0.018        0.002
285  23.75     0.07      0.020       (  0.279)       0.018        0.002
286  23.83     0.07      0.020       (  0.279)       0.018        0.002
287  23.92     0.07      0.020       (  0.279)       0.018        0.002
288  24.00     0.07      0.020       (  0.278)       0.018        0.002
               (Loss Rate Not Used)
    Sum =     100.0                                    Sum =     3.0
      Flood volume = Effective rainfall      0.25(In)
       times area      15.7(Ac.)/[(In)/(Ft.)] =       0.3(Ac.Ft)
      Total soil loss =      2.25(In)
      Total soil loss =     2.944(Ac.Ft)
      Total rainfall =      2.50(In)
      Flood volume =       14247.3 Cubic Feet
      Total soil loss =      128225.8 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      0.531(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0000      0.00  Q         |         |         |         |
   0+10       0.0001      0.02  Q         |         |         |         |
   0+15       0.0003      0.02  Q         |         |         |         |
   0+20       0.0005      0.03  Q         |         |         |         |
   0+25       0.0007      0.04  Q         |         |         |         |
   0+30       0.0010      0.04  Q         |         |         |         |
   0+35       0.0013      0.04  Q         |         |         |         |
   0+40       0.0016      0.04  Q         |         |         |         |
   0+45       0.0019      0.05  Q         |         |         |         |
   0+50       0.0022      0.05  Q         |         |         |         |
   0+55       0.0026      0.05  Q         |         |         |         |
   1+ 0       0.0030      0.06  Q         |         |         |         |
   1+ 5       0.0034      0.06  Q         |         |         |         |
   1+10       0.0038      0.05  Q         |         |         |         |
   1+15       0.0041      0.05  Q         |         |         |         |
   1+20       0.0045      0.05  Q         |         |         |         |
   1+25       0.0048      0.05  Q         |         |         |         |
```

```
1+30       0.0051      0.05  Q          |          |          |          |
1+35       0.0055      0.05  Q          |          |          |          |
1+40       0.0058      0.05  Q          |          |          |          |
1+45       0.0061      0.05  Q          |          |          |          |
1+50       0.0065      0.05  Q          |          |          |          |
1+55       0.0069      0.06  Q          |          |          |          |
2+ 0       0.0073      0.06  Q          |          |          |          |
2+ 5       0.0077      0.06  Q          |          |          |          |
2+10       0.0081      0.06  Q          |          |          |          |
2+15       0.0085      0.06  QV         |          |          |          |
2+20       0.0090      0.06  QV         |          |          |          |
2+25       0.0094      0.06  QV         |          |          |          |
2+30       0.0098      0.06  QV         |          |          |          |
2+35       0.0103      0.06  QV         |          |          |          |
2+40       0.0108      0.07  QV         |          |          |          |
2+45       0.0113      0.07  QV         |          |          |          |
2+50       0.0118      0.08  QV         |          |          |          |
2+55       0.0123      0.08  QV         |          |          |          |
3+ 0       0.0129      0.08  QV         |          |          |          |
3+ 5       0.0134      0.08  QV         |          |          |          |
3+10       0.0140      0.08  QV         |          |          |          |
3+15       0.0145      0.08  QV         |          |          |          |
3+20       0.0150      0.08  QV         |          |          |          |
3+25       0.0156      0.08  QV         |          |          |          |
3+30       0.0161      0.08  QV         |          |          |          |
3+35       0.0167      0.08  Q V        |          |          |          |
3+40       0.0172      0.08  Q V        |          |          |          |
3+45       0.0178      0.08  Q V        |          |          |          |
3+50       0.0183      0.08  Q V        |          |          |          |
3+55       0.0189      0.09  Q V        |          |          |          |
4+ 0       0.0195      0.09  Q V        |          |          |          |
4+ 5       0.0202      0.09  Q V        |          |          |          |
4+10       0.0208      0.09  Q V        |          |          |          |
4+15       0.0215      0.09  Q V        |          |          |          |
4+20       0.0221      0.10  Q V        |          |          |          |
4+25       0.0228      0.10  Q V        |          |          |          |
4+30       0.0236      0.11  Q V        |          |          |          |
4+35       0.0243      0.11  Q V        |          |          |          |
4+40       0.0250      0.11  Q  V       |          |          |          |
4+45       0.0258      0.11  Q  V       |          |          |          |
4+50       0.0266      0.11  Q  V       |          |          |          |
4+55       0.0274      0.12  Q  V       |          |          |          |
5+ 0       0.0282      0.12  Q  V       |          |          |          |
5+ 5       0.0290      0.12  Q  V       |          |          |          |
5+10       0.0298      0.11  Q  V       |          |          |          |
5+15       0.0305      0.10  Q  V       |          |          |          |
5+20       0.0312      0.10  Q  V       |          |          |          |
5+25       0.0319      0.11  Q  V       |          |          |          |
5+30       0.0327      0.11  Q  V       |          |          |          |
5+35       0.0334      0.11  Q   V      |          |          |          |
5+40       0.0343      0.12  Q   V      |          |          |          |
5+45       0.0351      0.12  Q   V      |          |          |          |
5+50       0.0359      0.12  Q   V      |          |          |          |
5+55       0.0368      0.12  Q   V      |          |          |          |
6+ 0       0.0377      0.12  Q   V      |          |          |          |
6+ 5       0.0385      0.13  Q   V      |          |          |          |
6+10       0.0395      0.13  Q   V      |          |          |          |
6+15       0.0404      0.14  Q   V      |          |          |          |
6+20       0.0414      0.14  Q    V     |          |          |          |
6+25       0.0423      0.14  Q    V     |          |          |          |
6+30       0.0433      0.14  Q    V     |          |          |          |
6+35       0.0443      0.14  Q    V     |          |          |          |
6+40       0.0453      0.15  Q    V     |          |          |          |
6+45       0.0464      0.15  Q    V     |          |          |          |
6+50       0.0474      0.16  Q    V     |          |          |          |
6+55       0.0485      0.16  Q    V     |          |          |          |
7+ 0       0.0496      0.16  Q     V    |          |          |          |
7+ 5       0.0507      0.16  Q     V    |          |          |          |
7+10       0.0518      0.16  Q     V    |          |          |          |
7+15       0.0529      0.16  Q     V    |          |          |          |
7+20       0.0540      0.16  Q     V    |          |          |          |
7+25       0.0551      0.17  Q     V    |          |          |          |
7+30       0.0563      0.17  Q     V    |          |          |          |
```

```
 7+35      0.0575      0.17  Q      V  |          |          |          |
 7+40      0.0587      0.18  Q      V  |          |          |          |
 7+45      0.0600      0.18  Q      V  |          |          |          |
 7+50      0.0613      0.19  Q      V  |          |          |          |
 7+55      0.0626      0.20  Q      V  |          |          |          |
 8+ 0      0.0640      0.20  Q      V  |          |          |          |
 8+ 5      0.0654      0.20  Q      V  |          |          |          |
 8+10      0.0669      0.22  Q       V |          |          |          |
 8+15      0.0685      0.23  Q       V |          |          |          |
 8+20      0.0701      0.23  Q       V |          |          |          |
 8+25      0.0717      0.23  Q       V |          |          |          |
 8+30      0.0733      0.23  Q       V |          |          |          |
 8+35      0.0749      0.24  Q        V|          |          |          |
 8+40      0.0766      0.24  Q        V|          |          |          |
 8+45      0.0783      0.25  Q        V|          |          |          |
 8+50      0.0800      0.25  |Q       V|          |          |          |
 8+55      0.0818      0.26  |Q        V          |          |          |
 9+ 0      0.0836      0.26  |Q        V          |          |          |
 9+ 5      0.0855      0.27  |Q        V          |          |          |
 9+10      0.0874      0.28  |Q        V          |          |          |
 9+15      0.0894      0.29  |Q        V          |          |          |
 9+20      0.0914      0.30  |Q        |V         |          |          |
 9+25      0.0935      0.30  |Q        |V         |          |          |
 9+30      0.0957      0.31  |Q        |V         |          |          |
 9+35      0.0978      0.31  |Q        |V         |          |          |
 9+40      0.1000      0.32  |Q        | V        |          |          |
 9+45      0.1023      0.33  |Q        | V        |          |          |
 9+50      0.1046      0.33  |Q        | V        |          |          |
 9+55      0.1069      0.34  |Q        |  V       |          |          |
10+ 0      0.1092      0.34  |Q        |  V       |          |          |
10+ 5      0.1115      0.33  |Q        |  V       |          |          |
10+10      0.1135      0.29  |Q        |  V       |          |          |
10+15      0.1154      0.27  |Q        |   V      |          |          |
10+20      0.1171      0.26  |Q        |   V      |          |          |
10+25      0.1188      0.25  |Q        |   V      |          |          |
10+30      0.1205      0.25  Q         |   V      |          |          |
10+35      0.1223      0.25  |Q        |   V      |          |          |
10+40      0.1242      0.28  |Q        |    V     |          |          |
10+45      0.1263      0.30  |Q        |    V     |          |          |
10+50      0.1284      0.30  |Q        |    V     |          |          |
10+55      0.1305      0.31  |Q        |    V     |          |          |
11+ 0      0.1326      0.31  |Q        |     V    |          |          |
11+ 5      0.1348      0.31  |Q        |     V    |          |          |
11+10      0.1369      0.31  |Q        |     V    |          |          |
11+15      0.1389      0.30  |Q        |     V    |          |          |
11+20      0.1410      0.30  |Q        |      V   |          |          |
11+25      0.1431      0.30  |Q        |      V   |          |          |
11+30      0.1452      0.30  |Q        |      V   |          |          |
11+35      0.1472      0.30  |Q        |       V  |          |          |
11+40      0.1492      0.29  |Q        |       V  |          |          |
11+45      0.1511      0.28  |Q        |       V  |          |          |
11+50      0.1530      0.28  |Q        |       V  |          |          |
11+55      0.1550      0.28  |Q        |       V  |          |          |
12+ 0      0.1569      0.28  |Q        |        V |          |          |
12+ 5      0.1590      0.30  |Q        |        V |          |          |
12+10      0.1613      0.34  |Q        |        V |          |          |
12+15      0.1638      0.37  |Q        |         V          |          |
12+20      0.1664      0.38  |Q        |         V          |          |
12+25      0.1691      0.39  |Q        |         V          |          |
12+30      0.1718      0.40  |Q        |         |V         |          |
12+35      0.1746      0.41  |Q        |         |V         |          |
12+40      0.1775      0.42  |Q        |         |V         |          |
12+45      0.1805      0.43  |Q        |         | V        |          |
12+50      0.1835      0.44  |Q        |         | V        |          |
12+55      0.1865      0.45  |Q        |         | V        |          |
13+ 0      0.1897      0.45  |Q        |         |  V       |          |
13+ 5      0.1928      0.46  |Q        |         |  V       |          |
13+10      0.1962      0.49  |Q        |         |  V       |          |
13+15      0.1998      0.51  | Q       |         |   V      |          |
13+20      0.2034      0.52  | Q       |         |   V      |          |
13+25      0.2070      0.53  | Q       |         |    V     |          |
13+30      0.2107      0.53  | Q       |         |    V     |          |
13+35      0.2142      0.52  | Q       |         |     V    |          |
```

```
13+40      0.2173      0.45  |Q        |          |     V    |          |
13+45      0.2201      0.41  |Q        |          |     V    |          |
13+50      0.2229      0.39  |Q        |          |      V   |          |
13+55      0.2255      0.38  |Q        |          |      V   |          |
14+ 0      0.2281      0.38  |Q        |          |      V   |          |
14+ 5      0.2307      0.38  |Q        |          |       V  |          |
14+10      0.2335      0.40  |Q        |          |       V  |          |
14+15      0.2364      0.41  |Q        |          |       V  |          |
14+20      0.2392      0.42  |Q        |          |        V |          |
14+25      0.2421      0.41  |Q        |          |        V |          |
14+30      0.2449      0.41  |Q        |          |        V |          |
14+35      0.2477      0.41  |Q        |          |         V          |
14+40      0.2506      0.41  |Q        |          |         V          |
14+45      0.2534      0.41  |Q        |          |         V          |
14+50      0.2562      0.41  |Q        |          |          |V        |
14+55      0.2590      0.40  |Q        |          |          |V        |
15+ 0      0.2618      0.40  |Q        |          |          | V       |
15+ 5      0.2645      0.40  |Q        |          |          | V       |
15+10      0.2672      0.39  |Q        |          |          | V       |
15+15      0.2698      0.39  |Q        |          |          |  V      |
15+20      0.2725      0.38  |Q        |          |          |  V      |
15+25      0.2751      0.37  |Q        |          |          |  V      |
15+30      0.2776      0.37  |Q        |          |          |  V      |
15+35      0.2801      0.36  |Q        |          |          |   V     |
15+40      0.2824      0.34  |Q        |          |          |   V     |
15+45      0.2846      0.32  |Q        |          |          |   V     |
15+50      0.2868      0.31  |Q        |          |          |    V    |
15+55      0.2889      0.31  |Q        |          |          |    V    |
16+ 0      0.2910      0.31  |Q        |          |          |    V    |
16+ 5      0.2929      0.28  |Q        |          |          |    V    |
16+10      0.2942      0.19  Q         |          |          |    V    |
16+15      0.2951      0.13  Q         |          |          |     V   |
16+20      0.2959      0.11  Q         |          |          |     V   |
16+25      0.2965      0.09  Q         |          |          |     V   |
16+30      0.2971      0.08  Q         |          |          |     V   |
16+35      0.2976      0.08  Q         |          |          |     V   |
16+40      0.2980      0.07  Q         |          |          |     V   |
16+45      0.2984      0.06  Q         |          |          |     V   |
16+50      0.2988      0.05  Q         |          |          |     V   |
16+55      0.2992      0.05  Q         |          |          |     V   |
17+ 0      0.2995      0.05  Q         |          |          |     V   |
17+ 5      0.2999      0.05  Q         |          |          |     V   |
17+10      0.3003      0.06  Q         |          |          |     V   |
17+15      0.3008      0.07  Q         |          |          |     V   |
17+20      0.3013      0.07  Q         |          |          |     V   |
17+25      0.3018      0.08  Q         |          |          |     V   |
17+30      0.3023      0.08  Q         |          |          |     V   |
17+35      0.3029      0.08  Q         |          |          |      V  |
17+40      0.3034      0.08  Q         |          |          |      V  |
17+45      0.3040      0.08  Q         |          |          |      V  |
17+50      0.3045      0.08  Q         |          |          |      V  |
17+55      0.3050      0.07  Q         |          |          |      V  |
18+ 0      0.3054      0.07  Q         |          |          |      V  |
18+ 5      0.3059      0.07  Q         |          |          |      V  |
18+10      0.3063      0.07  Q         |          |          |      V  |
18+15      0.3068      0.06  Q         |          |          |      V  |
18+20      0.3072      0.06  Q         |          |          |      V  |
18+25      0.3077      0.06  Q         |          |          |      V  |
18+30      0.3081      0.06  Q         |          |          |      V  |
18+35      0.3085      0.06  Q         |          |          |      V  |
18+40      0.3089      0.06  Q         |          |          |      V  |
18+45      0.3093      0.05  Q         |          |          |      V  |
18+50      0.3096      0.05  Q         |          |          |      V  |
18+55      0.3099      0.04  Q         |          |          |      V  |
19+ 0      0.3102      0.04  Q         |          |          |      V  |
19+ 5      0.3104      0.04  Q         |          |          |      V  |
19+10      0.3107      0.04  Q         |          |          |      V  |
19+15      0.3110      0.04  Q         |          |          |       V |
19+20      0.3113      0.05  Q         |          |          |       V |
19+25      0.3117      0.05  Q         |          |          |       V |
19+30      0.3121      0.06  Q         |          |          |       V |
19+35      0.3125      0.06  Q         |          |          |       V |
19+40      0.3129      0.05  Q         |          |          |       V |
```

```
  19+45       0.3132      0.05  Q          |          |          |        V |
  19+50       0.3136      0.05  Q          |          |          |        V |
  19+55       0.3138      0.04  Q          |          |          |        V |
  20+ 0       0.3141      0.04  Q          |          |          |        V |
  20+ 5       0.3143      0.04  Q          |          |          |        V |
  20+10       0.3146      0.04  Q          |          |          |        V |
  20+15       0.3149      0.04  Q          |          |          |        V |
  20+20       0.3153      0.05  Q          |          |          |        V |
  20+25       0.3156      0.05  Q          |          |          |        V |
  20+30       0.3159      0.05  Q          |          |          |        V |
  20+35       0.3162      0.05  Q          |          |          |        V |
  20+40       0.3165      0.05  Q          |          |          |        V |
  20+45       0.3169      0.05  Q          |          |          |        V |
  20+50       0.3172      0.05  Q          |          |          |        V |
  20+55       0.3175      0.04  Q          |          |          |        V |
  21+ 0       0.3177      0.04  Q          |          |          |        V |
  21+ 5       0.3179      0.04  Q          |          |          |        V |
  21+10       0.3182      0.04  Q          |          |          |        V |
  21+15       0.3185      0.04  Q          |          |          |        V |
  21+20       0.3188      0.04  Q          |          |          |        V |
  21+25       0.3191      0.04  Q          |          |          |         V|
  21+30       0.3193      0.04  Q          |          |          |         V|
  21+35       0.3196      0.04  Q          |          |          |         V|
  21+40       0.3199      0.04  Q          |          |          |         V|
  21+45       0.3202      0.04  Q          |          |          |         V|
  21+50       0.3205      0.04  Q          |          |          |         V|
  21+55       0.3207      0.04  Q          |          |          |         V|
  22+ 0       0.3210      0.04  Q          |          |          |         V|
  22+ 5       0.3212      0.04  Q          |          |          |         V|
  22+10       0.3215      0.04  Q          |          |          |         V|
  22+15       0.3218      0.04  Q          |          |          |         V|
  22+20       0.3221      0.04  Q          |          |          |         V|
  22+25       0.3224      0.04  Q          |          |          |         V|
  22+30       0.3226      0.04  Q          |          |          |         V|
  22+35       0.3229      0.03  Q          |          |          |         V|
  22+40       0.3231      0.03  Q          |          |          |         V|
  22+45       0.3233      0.03  Q          |          |          |         V|
  22+50       0.3235      0.03  Q          |          |          |         V|
  22+55       0.3237      0.03  Q          |          |          |         V|
  23+ 0       0.3240      0.03  Q          |          |          |         V|
  23+ 5       0.3242      0.03  Q          |          |          |         V|
  23+10       0.3244      0.03  Q          |          |          |         V|
  23+15       0.3246      0.03  Q          |          |          |         V|
  23+20       0.3248      0.03  Q          |          |          |         V|
  23+25       0.3251      0.03  Q          |          |          |         V|
  23+30       0.3253      0.03  Q          |          |          |         V|
  23+35       0.3255      0.03  Q          |          |          |         V|
  23+40       0.3257      0.03  Q          |          |          |         V|
  23+45       0.3259      0.03  Q          |          |          |         V|
  23+50       0.3262      0.03  Q          |          |          |         V|
  23+55       0.3264      0.03  Q          |          |          |         V|
  24+ 0       0.3266      0.03  Q          |          |          |         V|
  24+ 5       0.3268      0.03  Q          |          |          |         V|
  24+10       0.3269      0.02  Q          |          |          |         V|
  24+15       0.3270      0.01  Q          |          |          |         V|
  24+20       0.3270      0.01  Q          |          |          |         V|
  24+25       0.3270      0.00  Q          |          |          |         V|
  24+30       0.3270      0.00  Q          |          |          |         V|
  24+35       0.3271      0.00  Q          |          |          |         V|
  24+40       0.3271      0.00  Q          |          |          |         V|
  24+45       0.3271      0.00  Q          |          |          |         V|
  24+50       0.3271      0.00  Q          |          |          |         V|
  24+55       0.3271      0.00  Q          |          |          |          V
--------------------------------------------------------------------------
```

- **Area 'B' – 10 Year 1 Hour Existing Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: exb010110.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 6407

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
EXISTING CONDITION UNIT HYDROGRAPH - 10 YEAR 1 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
Drainage Area =      15.70(Ac.)  =      0.025 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      15.70(Ac.)  =      0.025 Sq. Mi.
Length along longest watercourse =    1928.00(Ft.)
Length along longest watercourse measured to centroid =     884.00(Ft.)
Length along longest watercourse =      0.365 Mi.
Length along longest watercourse measured to centroid =      0.167 Mi.
Difference in elevation =      15.00(Ft.)
Slope along watercourse =     41.0788 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time =    0.123 Hr.
Lag time =     7.37 Min.
25% of lag time =     1.84 Min.
40% of lag time =     2.95 Min.
Unit time =     5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           0.55                 8.63

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           1.45                22.76

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    0.550(In)
Area Averaged 100-Year Rainfall =    1.450(In)

Point rain (area averaged) =    0.920(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    0.920(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    15.700          70.40         0.000
 Total Area Entered =     15.70(Ac.)
```

```
      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
      70.4  70.4      0.357     0.000        0.357       1.000      0.357
                                                       Sum (F) =   0.357
      Area averaged mean soil loss (F) (In/Hr) =  0.357
      Minimum soil loss rate ((In/Hr)) =  0.179
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.900
      ------------------------------------------------------------------------
      Slope of intensity-duration curve for a 1 hour storm =0.4800
      ------------------------------------------------------------------------

                  U n i t  H y d r o g r a p h
                         VALLEY S-Curve
      ------------------------------------------------------------------------
                  Unit Hydrograph Data
      ------------------------------------------------------------------------
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
          (hrs)                          Graph %           (CFS)
      ------------------------------------------------------------------------
          1   0.083         67.808         10.072             1.594
          2   0.167        135.617         38.920             6.158
          3   0.250        203.425         23.906             3.783
          4   0.333        271.233          9.226             1.460
          5   0.417        339.042          5.609             0.887
          6   0.500        406.850          3.758             0.595
          7   0.583        474.658          2.504             0.396
          8   0.667        542.467          1.955             0.309
          9   0.750        610.275          1.419             0.225
         10   0.833        678.083          1.025             0.162
         11   0.917        745.891          0.725             0.115
         12   1.000        813.700          0.880             0.139
                                   Sum = 100.000   Sum=      15.823
------------------------------------------------------------------------


 The following loss rate calculations reflect use of the minimum calculated loss
 rate subtracted from the Storm Rain to produce the maximum Effective Rain value

  Unit Time   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)         Max   |   Low         (In/Hr)
   1   0.08     4.40      0.486          0.357    (  0.437)        0.129
   2   0.17     4.50      0.497          0.357    (  0.447)        0.140
   3   0.25     5.40      0.596          0.357    (  0.537)        0.239
   4   0.33     5.40      0.596          0.357    (  0.537)        0.239
   5   0.42     5.70      0.629          0.357    (  0.566)        0.272
   6   0.50     6.40      0.707          0.357    (  0.636)        0.349
   7   0.58     7.90      0.872          0.357    (  0.785)        0.515
   8   0.67     9.10      1.005          0.357    (  0.904)        0.648
   9   0.75    12.80      1.413          0.357    (  1.272)        1.056
  10   0.83    25.60      2.827          0.357    (  2.544)        2.469
  11   0.92     7.90      0.872          0.357    (  0.785)        0.515
  12   1.00     4.90      0.541          0.357    (  0.487)        0.184
             (Loss Rate Not Used)
     Sum =     100.0                                  Sum =     6.8
       Flood volume = Effective rainfall      0.56(In)
        times area      15.7(Ac.)/[(In)/(Ft.)] =       0.7(Ac.Ft)
       Total soil loss =      0.36(In)
       Total soil loss =     0.467(Ac.Ft)
       Total rainfall =      0.92(In)
       Flood volume =       32077.7 Cubic Feet
       Total soil loss =       20361.7 Cubic Feet
       ---------------------------------------------------------------------
        Peak flow rate of this hydrograph =     21.916(CFS)
       ---------------------------------------------------------------------
       +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                           1 - H O U R    S T O R M
                       R u n o f f      H y d r o g r a p h
       ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

       ---------------------------------------------------------------------
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
```

```
 ------------------------------------------------------------------------
   0+ 5       0.0014      0.20  Q         |          |          |          |
   0+10       0.0084      1.01  VQ        |          |          |          |
   0+15       0.0203      1.73  |VQ       |          |          |          |
   0+20       0.0380      2.57  | VQ      |          |          |          |
   0+25       0.0595      3.13  |  VQ     |          |          |          |
   0+30       0.0849      3.69  |   Q     |          |          |          |
   0+35       0.1173      4.70  |     Q   |          |          |          |
   0+40       0.1612      6.37  |       Q |          |          |          |
   0+45       0.2210      8.68  |         |QV        |          |          |
   0+50       0.3198     14.34  |         |      V Q|          |          |
   0+55       0.4707     21.92  |         |         |    V   Q|          |
   1+ 0       0.5780     15.58  |         |         Q          |V         |
   1+ 5       0.6364      8.47  |         |Q        |          |   V      |
   1+10       0.6699      4.87  |     Q   |         |          |     V    |
   1+15       0.6909      3.05  |   Q     |         |          |      V   |
   1+20       0.7052      2.08  | Q       |         |          |       V  |
   1+25       0.7158      1.53  | Q       |         |          |       V  |
   1+30       0.7234      1.10  |Q        |         |          |        V|
   1+35       0.7288      0.78  |Q        |         |          |        V|
   1+40       0.7326      0.56  Q         |         |          |        V|
   1+45       0.7356      0.43  Q         |         |          |        V|
   1+50       0.7362      0.09  Q         |         |          |        V|
   1+55       0.7364      0.03  Q         |         |          |         V
------------------------------------------------------------------------
```

- **Area 'B' – 10 Year 3 Hour Existing Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: exb010310.out

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6407

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format

------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
EXISTING CONDITION UNIT HYDROGRAPH - 10 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
Drainage Area =      15.70(Ac.)  =      0.025 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      15.70(Ac.)  =      0.025 Sq. Mi.
Length along longest watercourse =    1928.00(Ft.)
Length along longest watercourse measured to centroid =     884.00(Ft.)
Length along longest watercourse =      0.365 Mi.
Length along longest watercourse measured to centroid =      0.167 Mi.
Difference in elevation =      15.00(Ft.)
Slope along watercourse =     41.0788 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time =    0.123 Hr.
Lag time =     7.37 Min.
25% of lag time =     1.84 Min.
40% of lag time =     2.95 Min.
Unit time =     5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           1.00                 15.70

100 YEAR Area rainfall data:

Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           2.50                 39.25

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    1.000(In)
Area Averaged 100-Year Rainfall =    2.500(In)

Point rain (area averaged) =    1.617(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    1.617(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    15.700           70.40          0.000
 Total Area Entered =     15.70(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
70.4  70.4      0.357     0.000        0.357       1.000      0.357
                                                 Sum (F) =   0.357
Area averaged mean soil loss (F) (In/Hr) =  0.357
Minimum soil loss rate ((In/Hr)) =  0.179
```

(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	67.808	10.072	1.594
2	0.167	135.617	38.920	6.158
3	0.250	203.425	23.906	3.783
4	0.333	271.233	9.226	1.460
5	0.417	339.042	5.609	0.887
6	0.500	406.850	3.758	0.595
7	0.583	474.658	2.504	0.396
8	0.667	542.467	1.955	0.309
9	0.750	610.275	1.419	0.225
10	0.833	678.083	1.025	0.162
11	0.917	745.891	0.725	0.115
12	1.000	813.700	0.880	0.139
			Sum = 100.000	Sum= 15.823

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.252	(0.357)	0.227	0.025
2	0.17	1.30	0.252	(0.357)	0.227	0.025
3	0.25	1.10	0.213	(0.357)	0.192	0.021
4	0.33	1.50	0.291	(0.357)	0.262	0.029
5	0.42	1.50	0.291	(0.357)	0.262	0.029
6	0.50	1.80	0.349	(0.357)	0.314	0.035
7	0.58	1.50	0.291	(0.357)	0.262	0.029
8	0.67	1.80	0.349	(0.357)	0.314	0.035
9	0.75	1.80	0.349	(0.357)	0.314	0.035
10	0.83	1.50	0.291	(0.357)	0.262	0.029
11	0.92	1.60	0.310	(0.357)	0.279	0.031
12	1.00	1.80	0.349	(0.357)	0.314	0.035
13	1.08	2.20	0.427	0.357	(0.384)	0.070
14	1.17	2.20	0.427	0.357	(0.384)	0.070
15	1.25	2.20	0.427	0.357	(0.384)	0.070
16	1.33	2.00	0.388	(0.357)	0.349	0.039
17	1.42	2.60	0.505	0.357	(0.454)	0.147
18	1.50	2.70	0.524	0.357	(0.472)	0.167
19	1.58	2.40	0.466	0.357	(0.419)	0.108
20	1.67	2.70	0.524	0.357	(0.472)	0.167
21	1.75	3.30	0.640	0.357	(0.576)	0.283
22	1.83	3.10	0.602	0.357	(0.541)	0.244
23	1.92	2.90	0.563	0.357	(0.506)	0.205
24	2.00	3.00	0.582	0.357	(0.524)	0.225
25	2.08	3.10	0.602	0.357	(0.541)	0.244
26	2.17	4.20	0.815	0.357	(0.733)	0.458
27	2.25	5.00	0.970	0.357	(0.873)	0.613
28	2.33	3.50	0.679	0.357	(0.611)	0.322
29	2.42	6.80	1.319	0.357	(1.188)	0.962
30	2.50	7.30	1.416	0.357	(1.275)	1.059
31	2.58	8.20	1.591	0.357	(1.432)	1.234
32	2.67	5.90	1.145	0.357	(1.030)	0.788
33	2.75	2.00	0.388	(0.357)	0.349	0.039
34	2.83	1.80	0.349	(0.357)	0.314	0.035
35	2.92	1.80	0.349	(0.357)	0.314	0.035
36	3.00	0.60	0.116	(0.357)	0.105	0.012
		(Loss Rate Not Used)				
Sum =		100.0			Sum =	8.0

Flood volume = Effective rainfall 0.66(In)
times area 15.7(Ac.)/[(In)/(Ft.)] = 0.9(Ac.Ft)

```
      Total soil loss =      0.95(In)
      Total soil loss =     1.248(Ac.Ft)
      Total rainfall =      1.62(In)
      Flood volume =       37770.4 Cubic Feet
      Total soil loss =       54384.2 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =     15.331(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          3 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
 ------------------------------------------------------------------------
   0+ 5       0.0003      0.04  Q         |          |          |          |
   0+10       0.0016      0.20  Q         |          |          |          |
   0+15       0.0036      0.28  Q         |          |          |          |
   0+20       0.0057      0.31  Q         |          |          |          |
   0+25       0.0082      0.37  Q         |          |          |          |
   0+30       0.0111      0.41  Q         |          |          |          |
   0+35       0.0142      0.46  Q         |          |          |          |
   0+40       0.0175      0.47  Q         |          |          |          |
   0+45       0.0209      0.50  Q         |          |          |          |
   0+50       0.0244      0.51  |Q        |          |          |          |
   0+55       0.0278      0.49  QV        |          |          |          |
   1+ 0       0.0312      0.50  QV        |          |          |          |
   1+ 5       0.0352      0.58  |Q        |          |          |          |
   1+10       0.0407      0.81  |Q        |          |          |          |
   1+15       0.0472      0.94  |QV       |          |          |          |
   1+20       0.0538      0.95  |QV       |          |          |          |
   1+25       0.0604      0.96  |QV       |          |          |          |
   1+30       0.0712      1.57  |  Q      |          |          |          |
   1+35       0.0848      1.98  |  Q      |          |          |          |
   1+40       0.0981      1.93  |  QV     |          |          |          |
   1+45       0.1144      2.36  |   QV    |          |          |          |
   1+50       0.1366      3.23  |     Q   |          |          |          |
   1+55       0.1604      3.45  |     QV  |          |          |          |
   2+ 0       0.1833      3.32  |     Q V |          |          |          |
   2+ 5       0.2068      3.41  |     Q  V|          |          |          |
   2+10       0.2339      3.95  |      Q  V          |          |          |
   2+15       0.2726      5.62  |          |QV       |          |          |
   2+20       0.3207      6.98  |          |  QV     |          |          |
   2+25       0.3698      7.14  |          |   Q  V  |          |          |
   2+30       0.4426     10.57  |          |         VQ         |          |
   2+35       0.5372     13.73  |          |          |   V  Q  |          |
   2+40       0.6428     15.33  |          |          |        VQ          |
   2+45       0.7303     12.71  |          |          |    Q     |  V       |
   2+50       0.7792      7.10  |          |   Q      |          |    V     |
   2+55       0.8071      4.05  |       Q  |          |          |      V   |
   3+ 0       0.8266      2.83  |    Q     |          |          |       V  |
   3+ 5       0.8402      1.98  |  Q       |          |          |       V  |
   3+10       0.8496      1.36  | Q        |          |          |        V |
   3+15       0.8560      0.93  |Q         |          |          |        V |
   3+20       0.8608      0.69  |Q         |          |          |        V |
   3+25       0.8639      0.46  Q          |          |          |        V |
   3+30       0.8659      0.29  Q          |          |          |        V |
   3+35       0.8668      0.13  Q          |          |          |        V |
   3+40       0.8670      0.02  Q          |          |          |        V |
   3+45       0.8670      0.01  Q          |          |          |        V |
   3+50       0.8671      0.01  Q          |          |          |        V |
   3+55       0.8671      0.00  Q          |          |          |        V |
------------------------------------------------------------------------
```

- **Area 'B' – 10 Year 6 Hour Existing Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: exb010610.out

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6407

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format

------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
EXISTING CONDITION UNIT HYDROGRAPH - 10 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
Drainage Area =      15.70(Ac.)  =      0.025 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      15.70(Ac.)  =      0.025 Sq. Mi.
Length along longest watercourse =    1928.00(Ft.)
Length along longest watercourse measured to centroid =     884.00(Ft.)
Length along longest watercourse =      0.365 Mi.
Length along longest watercourse measured to centroid =      0.167 Mi.
Difference in elevation =      15.00(Ft.)
Slope along watercourse =     41.0788 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time =    0.123 Hr.
Lag time =     7.37 Min.
25% of lag time =     1.84 Min.
40% of lag time =     2.95 Min.
Unit time =     5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           1.40                 21.98

100 YEAR Area rainfall data:

Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           3.00                 47.10

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    1.400(In)
Area Averaged 100-Year Rainfall =    3.000(In)

Point rain (area averaged) =    2.058(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    2.058(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    15.700           70.40         0.000
 Total Area Entered =     15.70(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
70.4  70.4      0.357     0.000        0.357       1.000      0.357
                                                 Sum (F) =   0.357
Area averaged mean soil loss (F) (In/Hr) =  0.357
Minimum soil loss rate ((In/Hr)) =  0.179
(for 24 hour storm duration)
```

Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	67.808	10.072	1.594
2	0.167	135.617	38.920	6.158
3	0.250	203.425	23.906	3.783
4	0.333	271.233	9.226	1.460
5	0.417	339.042	5.609	0.887
6	0.500	406.850	3.758	0.595
7	0.583	474.658	2.504	0.396
8	0.667	542.467	1.955	0.309
9	0.750	610.275	1.419	0.225
10	0.833	678.083	1.025	0.162
11	0.917	745.891	0.725	0.115
12	1.000	813.700	0.880	0.139
			Sum = 100.000	Sum= 15.823

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.123	(0.357)	0.111	0.012
2	0.17	0.60	0.148	(0.357)	0.133	0.015
3	0.25	0.60	0.148	(0.357)	0.133	0.015
4	0.33	0.60	0.148	(0.357)	0.133	0.015
5	0.42	0.60	0.148	(0.357)	0.133	0.015
6	0.50	0.70	0.173	(0.357)	0.156	0.017
7	0.58	0.70	0.173	(0.357)	0.156	0.017
8	0.67	0.70	0.173	(0.357)	0.156	0.017
9	0.75	0.70	0.173	(0.357)	0.156	0.017
10	0.83	0.70	0.173	(0.357)	0.156	0.017
11	0.92	0.70	0.173	(0.357)	0.156	0.017
12	1.00	0.80	0.198	(0.357)	0.178	0.020
13	1.08	0.80	0.198	(0.357)	0.178	0.020
14	1.17	0.80	0.198	(0.357)	0.178	0.020
15	1.25	0.80	0.198	(0.357)	0.178	0.020
16	1.33	0.80	0.198	(0.357)	0.178	0.020
17	1.42	0.80	0.198	(0.357)	0.178	0.020
18	1.50	0.80	0.198	(0.357)	0.178	0.020
19	1.58	0.80	0.198	(0.357)	0.178	0.020
20	1.67	0.80	0.198	(0.357)	0.178	0.020
21	1.75	0.80	0.198	(0.357)	0.178	0.020
22	1.83	0.80	0.198	(0.357)	0.178	0.020
23	1.92	0.80	0.198	(0.357)	0.178	0.020
24	2.00	0.90	0.222	(0.357)	0.200	0.022
25	2.08	0.80	0.198	(0.357)	0.178	0.020
26	2.17	0.90	0.222	(0.357)	0.200	0.022
27	2.25	0.90	0.222	(0.357)	0.200	0.022
28	2.33	0.90	0.222	(0.357)	0.200	0.022
29	2.42	0.90	0.222	(0.357)	0.200	0.022
30	2.50	0.90	0.222	(0.357)	0.200	0.022
31	2.58	0.90	0.222	(0.357)	0.200	0.022
32	2.67	0.90	0.222	(0.357)	0.200	0.022
33	2.75	1.00	0.247	(0.357)	0.222	0.025
34	2.83	1.00	0.247	(0.357)	0.222	0.025
35	2.92	1.00	0.247	(0.357)	0.222	0.025
36	3.00	1.00	0.247	(0.357)	0.222	0.025
37	3.08	1.00	0.247	(0.357)	0.222	0.025
38	3.17	1.10	0.272	(0.357)	0.245	0.027
39	3.25	1.10	0.272	(0.357)	0.245	0.027
40	3.33	1.10	0.272	(0.357)	0.245	0.027
41	3.42	1.20	0.296	(0.357)	0.267	0.030

```
 42   3.50     1.30      0.321       (  0.357)       0.289        0.032
 43   3.58     1.40      0.346       (  0.357)       0.311        0.035
 44   3.67     1.40      0.346       (  0.357)       0.311        0.035
 45   3.75     1.50      0.370       (  0.357)       0.333        0.037
 46   3.83     1.50      0.370       (  0.357)       0.333        0.037
 47   3.92     1.60      0.395       (  0.357)       0.356        0.040
 48   4.00     1.60      0.395       (  0.357)       0.356        0.040
 49   4.08     1.70      0.420          0.357    (  0.378)        0.063
 50   4.17     1.80      0.445          0.357    (  0.400)        0.087
 51   4.25     1.90      0.469          0.357    (  0.422)        0.112
 52   4.33     2.00      0.494          0.357    (  0.445)        0.137
 53   4.42     2.10      0.519          0.357    (  0.467)        0.161
 54   4.50     2.10      0.519          0.357    (  0.467)        0.161
 55   4.58     2.20      0.543          0.357    (  0.489)        0.186
 56   4.67     2.30      0.568          0.357    (  0.511)        0.211
 57   4.75     2.40      0.593          0.357    (  0.533)        0.235
 58   4.83     2.40      0.593          0.357    (  0.533)        0.235
 59   4.92     2.50      0.617          0.357    (  0.556)        0.260
 60   5.00     2.60      0.642          0.357    (  0.578)        0.285
 61   5.08     3.10      0.766          0.357    (  0.689)        0.408
 62   5.17     3.60      0.889          0.357    (  0.800)        0.532
 63   5.25     3.90      0.963          0.357    (  0.867)        0.606
 64   5.33     4.20      1.037          0.357    (  0.934)        0.680
 65   5.42     4.70      1.161          0.357    (  1.045)        0.804
 66   5.50     5.60      1.383          0.357    (  1.245)        1.026
 67   5.58     1.90      0.469          0.357    (  0.422)        0.112
 68   5.67     0.90      0.222       (  0.357)       0.200        0.022
 69   5.75     0.60      0.148       (  0.357)       0.133        0.015
 70   5.83     0.50      0.123       (  0.357)       0.111        0.012
 71   5.92     0.30      0.074       (  0.357)       0.067        0.007
 72   6.00     0.20      0.049       (  0.357)       0.044        0.005
            (Loss Rate Not Used)
   Sum =     100.0                                    Sum =     7.5
     Flood volume = Effective rainfall      0.62(In)
      times area      15.7(Ac.)/[(In)/(Ft.)] =       0.8(Ac.Ft)
     Total soil loss =      1.44(In)
     Total soil loss =     1.879(Ac.Ft)
     Total rainfall =      2.06(In)
     Flood volume =       35440.1 Cubic Feet
     Total soil loss =       81855.5 Cubic Feet
     ---------------------------------------------------------------------
      Peak flow rate of this hydrograph =     11.790(CFS)
     ---------------------------------------------------------------------
     +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                         6 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
     ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

     ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
-------------------------------------------------------------------------
  0+ 5       0.0001      0.02  Q         |         |         |         |
  0+10       0.0008      0.10  Q         |         |         |         |
  0+15       0.0019      0.16  Q         |         |         |         |
  0+20       0.0032      0.19  Q         |         |         |         |
  0+25       0.0046      0.20  Q         |         |         |         |
  0+30       0.0061      0.22  Q         |         |         |         |
  0+35       0.0078      0.24  Q         |         |         |         |
  0+40       0.0095      0.25  Q         |         |         |         |
  0+45       0.0113      0.26  Q         |         |         |         |
  0+50       0.0131      0.26  Q         |         |         |         |
  0+55       0.0150      0.27  Q         |         |         |         |
  1+ 0       0.0169      0.27  Q         |         |         |         |
  1+ 5       0.0189      0.29  Q         |         |         |         |
  1+10       0.0210      0.30  QV        |         |         |         |
  1+15       0.0231      0.31  QV        |         |         |         |
  1+20       0.0252      0.31  QV        |         |         |         |
  1+25       0.0273      0.31  QV        |         |         |         |
  1+30       0.0294      0.31  QV        |         |         |         |
  1+35       0.0316      0.31  QV        |         |         |         |
  1+40       0.0337      0.31  QV        |         |         |         |
  1+45       0.0359      0.31  QV        |         |         |         |
```

```
   1+50       0.0380      0.31  QV        |         |         |         |
   1+55       0.0402      0.31  QV        |         |         |         |
   2+ 0       0.0424      0.32  Q V       |         |         |         |
   2+ 5       0.0446      0.33  Q V       |         |         |         |
   2+10       0.0469      0.33  Q V       |         |         |         |
   2+15       0.0492      0.34  Q V       |         |         |         |
   2+20       0.0516      0.34  Q V       |         |         |         |
   2+25       0.0539      0.35  Q V       |         |         |         |
   2+30       0.0563      0.35  Q V       |         |         |         |
   2+35       0.0587      0.35  Q V       |         |         |         |
   2+40       0.0612      0.35  Q  V      |         |         |         |
   2+45       0.0636      0.35  Q  V      |         |         |         |
   2+50       0.0661      0.37  Q  V      |         |         |         |
   2+55       0.0688      0.38  Q  V      |         |         |         |
   3+ 0       0.0714      0.38  Q  V      |         |         |         |
   3+ 5       0.0741      0.39  Q  V      |         |         |         |
   3+10       0.0768      0.39  Q  V      |         |         |         |
   3+15       0.0796      0.41  Q  V      |         |         |         |
   3+20       0.0824      0.42  Q   V     |         |         |         |
   3+25       0.0854      0.43  Q   V     |         |         |         |
   3+30       0.0885      0.45  Q   V     |         |         |         |
   3+35       0.0918      0.48  Q   V     |         |         |         |
   3+40       0.0953      0.51  |Q  V     |         |         |         |
   3+45       0.0989      0.53  |Q  V     |         |         |         |
   3+50       0.1027      0.55  |Q   V    |         |         |         |
   3+55       0.1066      0.57  |Q   V    |         |         |         |
   4+ 0       0.1107      0.59  |Q   V    |         |         |         |
   4+ 5       0.1151      0.64  |Q   V    |         |         |         |
   4+10       0.1208      0.83  |Q   V    |         |         |         |
   4+15       0.1285      1.11  | Q   V   |         |         |         |
   4+20       0.1384      1.44  | Q   V   |         |         |         |
   4+25       0.1506      1.78  |  Q   V  |         |         |         |
   4+30       0.1651      2.10  |   Q   V |         |         |         |
   4+35       0.1810      2.31  |   Q   V |         |         |         |
   4+40       0.1989      2.60  |    Q   V|         |         |         |
   4+45       0.2191      2.94  |    Q    V         |         |         |
   4+50       0.2416      3.26  |     Q   |V        |         |         |
   4+55       0.2656      3.48  |     Q   |  V      |         |         |
   5+ 0       0.2916      3.77  |      Q  |   V     |         |         |
   5+ 5       0.3210      4.28  |       Q |    V    |         |         |
   5+10       0.3582      5.41  |         Q      V  |         |         |
   5+15       0.4054      6.84  |          |  Q     V|         |         |
   5+20       0.4613      8.12  |          |     Q   | V       |         |
   5+25       0.5259      9.38  |          |       Q |    V    |         |
   5+30       0.6023     11.09  |          |         | Q      V|         |
   5+35       0.6835     11.79  |          |         |  Q      |  V      |
   5+40       0.7334      7.25  |          |   Q     |         |     V   |
   5+45       0.7596      3.81  |       Q  |         |         |      V  |
   5+50       0.7766      2.46  |    Q     |         |         |       V |
   5+55       0.7884      1.72  |  Q       |         |         |       V |
   6+ 0       0.7969      1.23  | Q        |         |         |        V|
   6+ 5       0.8031      0.90  |Q         |         |         |        V|
   6+10       0.8074      0.62  |Q         |         |         |        V|
   6+15       0.8102      0.41  Q          |         |         |        V|
   6+20       0.8121      0.27  Q          |         |         |        V|
   6+25       0.8133      0.17  Q          |         |         |        V|
   6+30       0.8134      0.03  Q          |         |         |        V|
   6+35       0.8135      0.01  Q          |         |         |        V|
   6+40       0.8136      0.01  Q          |         |         |        V|
   6+45       0.8136      0.00  Q          |         |         |        V|
   6+50       0.8136      0.00  Q          |         |         |        V|
   6+55       0.8136      0.00  Q          |         |         |         V
------------------------------------------------------------------------
```

- **Area 'B' – 10 Year 24 Hour Existing Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: exb0102410.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 6407

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
EXISTING CONDITION UNIT HYDROGRAPH - 10 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
Drainage Area =      15.70(Ac.)  =      0.025 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      15.70(Ac.)  =      0.025 Sq. Mi.
Length along longest watercourse =    1928.00(Ft.)
Length along longest watercourse measured to centroid =     884.00(Ft.)
Length along longest watercourse =      0.365 Mi.
Length along longest watercourse measured to centroid =      0.167 Mi.
Difference in elevation =      15.00(Ft.)
Slope along watercourse =     41.0788 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time =    0.123 Hr.
Lag time =     7.37 Min.
25% of lag time =     1.84 Min.
40% of lag time =     2.95 Min.
Unit time =     5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           2.50                 39.25

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           8.00                125.60

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    2.500(In)
Area Averaged 100-Year Rainfall =    8.000(In)

Point rain (area averaged) =    4.763(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    4.763(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    15.700           70.40          0.000
 Total Area Entered =     15.70(Ac.)
```

```
RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
70.4  70.4      0.357     0.000        0.357       1.000      0.357
                                                 Sum (F) =    0.357
Area averaged mean soil loss (F) (In/Hr) =  0.357
Minimum soil loss rate ((In/Hr)) =  0.179
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.900
------------------------------------------------------------------------

               U n i t  H y d r o g r a p h
                      VALLEY S-Curve
------------------------------------------------------------------------
               Unit Hydrograph Data
------------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %            (CFS)
------------------------------------------------------------------------
    1   0.083         67.808         10.072              1.594
    2   0.167        135.617         38.920              6.158
    3   0.250        203.425         23.906              3.783
    4   0.333        271.233          9.226              1.460
    5   0.417        339.042          5.609              0.887
    6   0.500        406.850          3.758              0.595
    7   0.583        474.658          2.504              0.396
    8   0.667        542.467          1.955              0.309
    9   0.750        610.275          1.419              0.225
   10   0.833        678.083          1.025              0.162
   11   0.917        745.891          0.725              0.115
   12   1.000        813.700          0.880              0.139
                                Sum = 100.000   Sum=      15.823
------------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.038	(0.633)	0.034	0.004
2	0.17	0.07	0.038	(0.631)	0.034	0.004
3	0.25	0.07	0.038	(0.628)	0.034	0.004
4	0.33	0.10	0.057	(0.626)	0.051	0.006
5	0.42	0.10	0.057	(0.624)	0.051	0.006
6	0.50	0.10	0.057	(0.621)	0.051	0.006
7	0.58	0.10	0.057	(0.619)	0.051	0.006
8	0.67	0.10	0.057	(0.616)	0.051	0.006
9	0.75	0.10	0.057	(0.614)	0.051	0.006
10	0.83	0.13	0.076	(0.611)	0.069	0.008
11	0.92	0.13	0.076	(0.609)	0.069	0.008
12	1.00	0.13	0.076	(0.607)	0.069	0.008
13	1.08	0.10	0.057	(0.604)	0.051	0.006
14	1.17	0.10	0.057	(0.602)	0.051	0.006
15	1.25	0.10	0.057	(0.600)	0.051	0.006
16	1.33	0.10	0.057	(0.597)	0.051	0.006
17	1.42	0.10	0.057	(0.595)	0.051	0.006
18	1.50	0.10	0.057	(0.592)	0.051	0.006
19	1.58	0.10	0.057	(0.590)	0.051	0.006
20	1.67	0.10	0.057	(0.588)	0.051	0.006
21	1.75	0.10	0.057	(0.585)	0.051	0.006
22	1.83	0.13	0.076	(0.583)	0.069	0.008
23	1.92	0.13	0.076	(0.581)	0.069	0.008
24	2.00	0.13	0.076	(0.578)	0.069	0.008
25	2.08	0.13	0.076	(0.576)	0.069	0.008
26	2.17	0.13	0.076	(0.574)	0.069	0.008
27	2.25	0.13	0.076	(0.571)	0.069	0.008
28	2.33	0.13	0.076	(0.569)	0.069	0.008
29	2.42	0.13	0.076	(0.567)	0.069	0.008
30	2.50	0.13	0.076	(0.564)	0.069	0.008
31	2.58	0.17	0.095	(0.562)	0.086	0.010
32	2.67	0.17	0.095	(0.560)	0.086	0.010
33	2.75	0.17	0.095	(0.557)	0.086	0.010

34	2.83	0.17	0.095	(0.555)	0.086	0.010
35	2.92	0.17	0.095	(0.553)	0.086	0.010
36	3.00	0.17	0.095	(0.550)	0.086	0.010
37	3.08	0.17	0.095	(0.548)	0.086	0.010
38	3.17	0.17	0.095	(0.546)	0.086	0.010
39	3.25	0.17	0.095	(0.544)	0.086	0.010
40	3.33	0.17	0.095	(0.541)	0.086	0.010
41	3.42	0.17	0.095	(0.539)	0.086	0.010
42	3.50	0.17	0.095	(0.537)	0.086	0.010
43	3.58	0.17	0.095	(0.535)	0.086	0.010
44	3.67	0.17	0.095	(0.532)	0.086	0.010
45	3.75	0.17	0.095	(0.530)	0.086	0.010
46	3.83	0.20	0.114	(0.528)	0.103	0.011
47	3.92	0.20	0.114	(0.526)	0.103	0.011
48	4.00	0.20	0.114	(0.523)	0.103	0.011
49	4.08	0.20	0.114	(0.521)	0.103	0.011
50	4.17	0.20	0.114	(0.519)	0.103	0.011
51	4.25	0.20	0.114	(0.517)	0.103	0.011
52	4.33	0.23	0.133	(0.515)	0.120	0.013
53	4.42	0.23	0.133	(0.512)	0.120	0.013
54	4.50	0.23	0.133	(0.510)	0.120	0.013
55	4.58	0.23	0.133	(0.508)	0.120	0.013
56	4.67	0.23	0.133	(0.506)	0.120	0.013
57	4.75	0.23	0.133	(0.504)	0.120	0.013
58	4.83	0.27	0.152	(0.501)	0.137	0.015
59	4.92	0.27	0.152	(0.499)	0.137	0.015
60	5.00	0.27	0.152	(0.497)	0.137	0.015
61	5.08	0.20	0.114	(0.495)	0.103	0.011
62	5.17	0.20	0.114	(0.493)	0.103	0.011
63	5.25	0.20	0.114	(0.491)	0.103	0.011
64	5.33	0.23	0.133	(0.489)	0.120	0.013
65	5.42	0.23	0.133	(0.486)	0.120	0.013
66	5.50	0.23	0.133	(0.484)	0.120	0.013
67	5.58	0.27	0.152	(0.482)	0.137	0.015
68	5.67	0.27	0.152	(0.480)	0.137	0.015
69	5.75	0.27	0.152	(0.478)	0.137	0.015
70	5.83	0.27	0.152	(0.476)	0.137	0.015
71	5.92	0.27	0.152	(0.474)	0.137	0.015
72	6.00	0.27	0.152	(0.472)	0.137	0.015
73	6.08	0.30	0.171	(0.470)	0.154	0.017
74	6.17	0.30	0.171	(0.467)	0.154	0.017
75	6.25	0.30	0.171	(0.465)	0.154	0.017
76	6.33	0.30	0.171	(0.463)	0.154	0.017
77	6.42	0.30	0.171	(0.461)	0.154	0.017
78	6.50	0.30	0.171	(0.459)	0.154	0.017
79	6.58	0.33	0.191	(0.457)	0.171	0.019
80	6.67	0.33	0.191	(0.455)	0.171	0.019
81	6.75	0.33	0.191	(0.453)	0.171	0.019
82	6.83	0.33	0.191	(0.451)	0.171	0.019
83	6.92	0.33	0.191	(0.449)	0.171	0.019
84	7.00	0.33	0.191	(0.447)	0.171	0.019
85	7.08	0.33	0.191	(0.445)	0.171	0.019
86	7.17	0.33	0.191	(0.443)	0.171	0.019
87	7.25	0.33	0.191	(0.441)	0.171	0.019
88	7.33	0.37	0.210	(0.439)	0.189	0.021
89	7.42	0.37	0.210	(0.437)	0.189	0.021
90	7.50	0.37	0.210	(0.435)	0.189	0.021
91	7.58	0.40	0.229	(0.433)	0.206	0.023
92	7.67	0.40	0.229	(0.431)	0.206	0.023
93	7.75	0.40	0.229	(0.429)	0.206	0.023
94	7.83	0.43	0.248	(0.427)	0.223	0.025
95	7.92	0.43	0.248	(0.425)	0.223	0.025
96	8.00	0.43	0.248	(0.423)	0.223	0.025
97	8.08	0.50	0.286	(0.421)	0.257	0.029
98	8.17	0.50	0.286	(0.419)	0.257	0.029
99	8.25	0.50	0.286	(0.417)	0.257	0.029
100	8.33	0.50	0.286	(0.415)	0.257	0.029
101	8.42	0.50	0.286	(0.413)	0.257	0.029
102	8.50	0.50	0.286	(0.411)	0.257	0.029
103	8.58	0.53	0.305	(0.409)	0.274	0.030
104	8.67	0.53	0.305	(0.407)	0.274	0.030
105	8.75	0.53	0.305	(0.405)	0.274	0.030
106	8.83	0.57	0.324	(0.403)	0.291	0.032

107	8.92	0.57	0.324	(0.402)	0.291	0.032
108	9.00	0.57	0.324	(0.400)	0.291	0.032
109	9.08	0.63	0.362	(0.398)	0.326	0.036
110	9.17	0.63	0.362	(0.396)	0.326	0.036
111	9.25	0.63	0.362	(0.394)	0.326	0.036
112	9.33	0.67	0.381	(0.392)	0.343	0.038
113	9.42	0.67	0.381	(0.390)	0.343	0.038
114	9.50	0.67	0.381	(0.388)	0.343	0.038
115	9.58	0.70	0.400	(0.386)	0.360	0.040
116	9.67	0.70	0.400	(0.385)	0.360	0.040
117	9.75	0.70	0.400	(0.383)	0.360	0.040
118	9.83	0.73	0.419	(0.381)	0.377	0.042
119	9.92	0.73	0.419	(0.379)	0.377	0.042
120	10.00	0.73	0.419	(0.377)	0.377	0.042
121	10.08	0.50	0.286	(0.375)	0.257	0.029
122	10.17	0.50	0.286	(0.374)	0.257	0.029
123	10.25	0.50	0.286	(0.372)	0.257	0.029
124	10.33	0.50	0.286	(0.370)	0.257	0.029
125	10.42	0.50	0.286	(0.368)	0.257	0.029
126	10.50	0.50	0.286	(0.366)	0.257	0.029
127	10.58	0.67	0.381	(0.365)	0.343	0.038
128	10.67	0.67	0.381	(0.363)	0.343	0.038
129	10.75	0.67	0.381	(0.361)	0.343	0.038
130	10.83	0.67	0.381	(0.359)	0.343	0.038
131	10.92	0.67	0.381	(0.358)	0.343	0.038
132	11.00	0.67	0.381	(0.356)	0.343	0.038
133	11.08	0.63	0.362	(0.354)	0.326	0.036
134	11.17	0.63	0.362	(0.352)	0.326	0.036
135	11.25	0.63	0.362	(0.351)	0.326	0.036
136	11.33	0.63	0.362	(0.349)	0.326	0.036
137	11.42	0.63	0.362	(0.347)	0.326	0.036
138	11.50	0.63	0.362	(0.345)	0.326	0.036
139	11.58	0.57	0.324	(0.344)	0.291	0.032
140	11.67	0.57	0.324	(0.342)	0.291	0.032
141	11.75	0.57	0.324	(0.340)	0.291	0.032
142	11.83	0.60	0.343	(0.339)	0.309	0.034
143	11.92	0.60	0.343	(0.337)	0.309	0.034
144	12.00	0.60	0.343	(0.335)	0.309	0.034
145	12.08	0.83	0.476	0.334	(0.429)	0.143
146	12.17	0.83	0.476	0.332	(0.429)	0.144
147	12.25	0.83	0.476	0.330	(0.429)	0.146
148	12.33	0.87	0.495	0.329	(0.446)	0.167
149	12.42	0.87	0.495	0.327	(0.446)	0.168
150	12.50	0.87	0.495	0.325	(0.446)	0.170
151	12.58	0.93	0.533	0.324	(0.480)	0.210
152	12.67	0.93	0.533	0.322	(0.480)	0.211
153	12.75	0.93	0.533	0.320	(0.480)	0.213
154	12.83	0.97	0.552	0.319	(0.497)	0.234
155	12.92	0.97	0.552	0.317	(0.497)	0.235
156	13.00	0.97	0.552	0.316	(0.497)	0.237
157	13.08	1.13	0.648	0.314	(0.583)	0.334
158	13.17	1.13	0.648	0.312	(0.583)	0.335
159	13.25	1.13	0.648	0.311	(0.583)	0.337
160	13.33	1.13	0.648	0.309	(0.583)	0.339
161	13.42	1.13	0.648	0.308	(0.583)	0.340
162	13.50	1.13	0.648	0.306	(0.583)	0.342
163	13.58	0.77	0.438	0.304	(0.394)	0.134
164	13.67	0.77	0.438	0.303	(0.394)	0.135
165	13.75	0.77	0.438	0.301	(0.394)	0.137
166	13.83	0.77	0.438	0.300	(0.394)	0.138
167	13.92	0.77	0.438	0.298	(0.394)	0.140
168	14.00	0.77	0.438	0.297	(0.394)	0.141
169	14.08	0.90	0.514	0.295	(0.463)	0.219
170	14.17	0.90	0.514	0.294	(0.463)	0.221
171	14.25	0.90	0.514	0.292	(0.463)	0.222
172	14.33	0.87	0.495	0.291	(0.446)	0.205
173	14.42	0.87	0.495	0.289	(0.446)	0.206
174	14.50	0.87	0.495	0.288	(0.446)	0.208
175	14.58	0.87	0.495	0.286	(0.446)	0.209
176	14.67	0.87	0.495	0.285	(0.446)	0.210
177	14.75	0.87	0.495	0.283	(0.446)	0.212
178	14.83	0.83	0.476	0.282	(0.429)	0.194
179	14.92	0.83	0.476	0.280	(0.429)	0.196

180	15.00	0.83	0.476	0.279	(0.429)	0.197
181	15.08	0.80	0.457	0.278	(0.411)	0.180
182	15.17	0.80	0.457	0.276	(0.411)	0.181
183	15.25	0.80	0.457	0.275	(0.411)	0.182
184	15.33	0.77	0.438	0.273	(0.394)	0.165
185	15.42	0.77	0.438	0.272	(0.394)	0.166
186	15.50	0.77	0.438	0.271	(0.394)	0.168
187	15.58	0.63	0.362	0.269	(0.326)	0.093
188	15.67	0.63	0.362	0.268	(0.326)	0.094
189	15.75	0.63	0.362	0.266	(0.326)	0.096
190	15.83	0.63	0.362	0.265	(0.326)	0.097
191	15.92	0.63	0.362	0.264	(0.326)	0.098
192	16.00	0.63	0.362	0.262	(0.326)	0.100
193	16.08	0.13	0.076	(0.261)	0.069	0.008
194	16.17	0.13	0.076	(0.260)	0.069	0.008
195	16.25	0.13	0.076	(0.258)	0.069	0.008
196	16.33	0.13	0.076	(0.257)	0.069	0.008
197	16.42	0.13	0.076	(0.256)	0.069	0.008
198	16.50	0.13	0.076	(0.254)	0.069	0.008
199	16.58	0.10	0.057	(0.253)	0.051	0.006
200	16.67	0.10	0.057	(0.252)	0.051	0.006
201	16.75	0.10	0.057	(0.251)	0.051	0.006
202	16.83	0.10	0.057	(0.249)	0.051	0.006
203	16.92	0.10	0.057	(0.248)	0.051	0.006
204	17.00	0.10	0.057	(0.247)	0.051	0.006
205	17.08	0.17	0.095	(0.246)	0.086	0.010
206	17.17	0.17	0.095	(0.244)	0.086	0.010
207	17.25	0.17	0.095	(0.243)	0.086	0.010
208	17.33	0.17	0.095	(0.242)	0.086	0.010
209	17.42	0.17	0.095	(0.241)	0.086	0.010
210	17.50	0.17	0.095	(0.239)	0.086	0.010
211	17.58	0.17	0.095	(0.238)	0.086	0.010
212	17.67	0.17	0.095	(0.237)	0.086	0.010
213	17.75	0.17	0.095	(0.236)	0.086	0.010
214	17.83	0.13	0.076	(0.235)	0.069	0.008
215	17.92	0.13	0.076	(0.234)	0.069	0.008
216	18.00	0.13	0.076	(0.232)	0.069	0.008
217	18.08	0.13	0.076	(0.231)	0.069	0.008
218	18.17	0.13	0.076	(0.230)	0.069	0.008
219	18.25	0.13	0.076	(0.229)	0.069	0.008
220	18.33	0.13	0.076	(0.228)	0.069	0.008
221	18.42	0.13	0.076	(0.227)	0.069	0.008
222	18.50	0.13	0.076	(0.226)	0.069	0.008
223	18.58	0.10	0.057	(0.225)	0.051	0.006
224	18.67	0.10	0.057	(0.223)	0.051	0.006
225	18.75	0.10	0.057	(0.222)	0.051	0.006
226	18.83	0.07	0.038	(0.221)	0.034	0.004
227	18.92	0.07	0.038	(0.220)	0.034	0.004
228	19.00	0.07	0.038	(0.219)	0.034	0.004
229	19.08	0.10	0.057	(0.218)	0.051	0.006
230	19.17	0.10	0.057	(0.217)	0.051	0.006
231	19.25	0.10	0.057	(0.216)	0.051	0.006
232	19.33	0.13	0.076	(0.215)	0.069	0.008
233	19.42	0.13	0.076	(0.214)	0.069	0.008
234	19.50	0.13	0.076	(0.213)	0.069	0.008
235	19.58	0.10	0.057	(0.212)	0.051	0.006
236	19.67	0.10	0.057	(0.211)	0.051	0.006
237	19.75	0.10	0.057	(0.210)	0.051	0.006
238	19.83	0.07	0.038	(0.209)	0.034	0.004
239	19.92	0.07	0.038	(0.208)	0.034	0.004
240	20.00	0.07	0.038	(0.207)	0.034	0.004
241	20.08	0.10	0.057	(0.207)	0.051	0.006
242	20.17	0.10	0.057	(0.206)	0.051	0.006
243	20.25	0.10	0.057	(0.205)	0.051	0.006
244	20.33	0.10	0.057	(0.204)	0.051	0.006
245	20.42	0.10	0.057	(0.203)	0.051	0.006
246	20.50	0.10	0.057	(0.202)	0.051	0.006
247	20.58	0.10	0.057	(0.201)	0.051	0.006
248	20.67	0.10	0.057	(0.200)	0.051	0.006
249	20.75	0.10	0.057	(0.200)	0.051	0.006
250	20.83	0.07	0.038	(0.199)	0.034	0.004
251	20.92	0.07	0.038	(0.198)	0.034	0.004
252	21.00	0.07	0.038	(0.197)	0.034	0.004

```
253  21.08     0.10      0.057       (  0.196)       0.051        0.006
254  21.17     0.10      0.057       (  0.196)       0.051        0.006
255  21.25     0.10      0.057       (  0.195)       0.051        0.006
256  21.33     0.07      0.038       (  0.194)       0.034        0.004
257  21.42     0.07      0.038       (  0.193)       0.034        0.004
258  21.50     0.07      0.038       (  0.193)       0.034        0.004
259  21.58     0.10      0.057       (  0.192)       0.051        0.006
260  21.67     0.10      0.057       (  0.191)       0.051        0.006
261  21.75     0.10      0.057       (  0.191)       0.051        0.006
262  21.83     0.07      0.038       (  0.190)       0.034        0.004
263  21.92     0.07      0.038       (  0.189)       0.034        0.004
264  22.00     0.07      0.038       (  0.189)       0.034        0.004
265  22.08     0.10      0.057       (  0.188)       0.051        0.006
266  22.17     0.10      0.057       (  0.187)       0.051        0.006
267  22.25     0.10      0.057       (  0.187)       0.051        0.006
268  22.33     0.07      0.038       (  0.186)       0.034        0.004
269  22.42     0.07      0.038       (  0.186)       0.034        0.004
270  22.50     0.07      0.038       (  0.185)       0.034        0.004
271  22.58     0.07      0.038       (  0.185)       0.034        0.004
272  22.67     0.07      0.038       (  0.184)       0.034        0.004
273  22.75     0.07      0.038       (  0.184)       0.034        0.004
274  22.83     0.07      0.038       (  0.183)       0.034        0.004
275  22.92     0.07      0.038       (  0.183)       0.034        0.004
276  23.00     0.07      0.038       (  0.182)       0.034        0.004
277  23.08     0.07      0.038       (  0.182)       0.034        0.004
278  23.17     0.07      0.038       (  0.181)       0.034        0.004
279  23.25     0.07      0.038       (  0.181)       0.034        0.004
280  23.33     0.07      0.038       (  0.181)       0.034        0.004
281  23.42     0.07      0.038       (  0.180)       0.034        0.004
282  23.50     0.07      0.038       (  0.180)       0.034        0.004
283  23.58     0.07      0.038       (  0.180)       0.034        0.004
284  23.67     0.07      0.038       (  0.179)       0.034        0.004
285  23.75     0.07      0.038       (  0.179)       0.034        0.004
286  23.83     0.07      0.038       (  0.179)       0.034        0.004
287  23.92     0.07      0.038       (  0.179)       0.034        0.004
288  24.00     0.07      0.038       (  0.179)       0.034        0.004
              (Loss Rate Not Used)
    Sum =     100.0                                  Sum =    12.6
      Flood volume = Effective rainfall      1.05(In)
       times area      15.7(Ac.)/[(In)/(Ft.)] =       1.4(Ac.Ft)
      Total soil loss =      3.71(In)
      Total soil loss =     4.856(Ac.Ft)
      Total rainfall =      4.76(In)
      Flood volume =       59909.2 Cubic Feet
      Total soil loss =      211516.1 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      5.218(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0000      0.01  Q         |         |         |         |
   0+10       0.0002      0.03  Q         |         |         |         |
   0+15       0.0005      0.04  Q         |         |         |         |
   0+20       0.0009      0.05  Q         |         |         |         |
   0+25       0.0014      0.07  Q         |         |         |         |
   0+30       0.0019      0.08  Q         |         |         |         |
   0+35       0.0025      0.08  Q         |         |         |         |
   0+40       0.0030      0.08  Q         |         |         |         |
   0+45       0.0036      0.09  Q         |         |         |         |
   0+50       0.0043      0.09  Q         |         |         |         |
   0+55       0.0050      0.10  Q         |         |         |         |
   1+ 0       0.0058      0.11  Q         |         |         |         |
   1+ 5       0.0065      0.11  Q         |         |         |         |
   1+10       0.0072      0.10  Q         |         |         |         |
   1+15       0.0079      0.10  Q         |         |         |         |
   1+20       0.0085      0.09  Q         |         |         |         |
```

1+25	0.0092	0.09	Q	|	|	|	|
1+30	0.0098	0.09	Q	|	|	|	|
1+35	0.0104	0.09	Q	|	|	|	|
1+40	0.0111	0.09	Q	|	|	|	|
1+45	0.0117	0.09	Q	|	|	|	|
1+50	0.0123	0.09	Q	|	|	|	|
1+55	0.0131	0.11	Q	|	|	|	|
2+ 0	0.0138	0.11	Q	|	|	|	|
2+ 5	0.0146	0.12	Q	|	|	|	|
2+10	0.0154	0.12	Q	|	|	|	|
2+15	0.0163	0.12	Q	|	|	|	|
2+20	0.0171	0.12	Q	|	|	|	|
2+25	0.0179	0.12	Q	|	|	|	|
2+30	0.0187	0.12	Q	|	|	|	|
2+35	0.0196	0.12	Q	|	|	|	|
2+40	0.0205	0.14	Q	|	|	|	|
2+45	0.0215	0.14	Q	|	|	|	|
2+50	0.0225	0.15	Q	|	|	|	|
2+55	0.0235	0.15	Q	|	|	|	|
3+ 0	0.0245	0.15	Q	|	|	|	|
3+ 5	0.0255	0.15	Q	|	|	|	|
3+10	0.0266	0.15	Q	|	|	|	|
3+15	0.0276	0.15	Q	|	|	|	|
3+20	0.0286	0.15	Q	|	|	|	|
3+25	0.0297	0.15	Q	|	|	|	|
3+30	0.0307	0.15	Q	|	|	|	|
3+35	0.0318	0.15	Q	|	|	|	|
3+40	0.0328	0.15	Q	|	|	|	|
3+45	0.0338	0.15	Q	|	|	|	|
3+50	0.0349	0.15	QV	|	|	|	|
3+55	0.0360	0.17	QV	|	|	|	|
4+ 0	0.0372	0.17	QV	|	|	|	|
4+ 5	0.0384	0.18	QV	|	|	|	|
4+10	0.0397	0.18	QV	|	|	|	|
4+15	0.0409	0.18	QV	|	|	|	|
4+20	0.0421	0.18	QV	|	|	|	|
4+25	0.0435	0.19	QV	|	|	|	|
4+30	0.0449	0.20	QV	|	|	|	|
4+35	0.0463	0.21	QV	|	|	|	|
4+40	0.0477	0.21	QV	|	|	|	|
4+45	0.0491	0.21	QV	|	|	|	|
4+50	0.0506	0.21	QV	|	|	|	|
4+55	0.0522	0.22	QV	|	|	|	|
5+ 0	0.0538	0.23	QV	|	|	|	|
5+ 5	0.0553	0.23	QV	|	|	|	|
5+10	0.0568	0.21	QV	|	|	|	|
5+15	0.0581	0.19	QV	|	|	|	|
5+20	0.0594	0.19	QV	|	|	|	|
5+25	0.0608	0.20	QV	|	|	|	|
5+30	0.0623	0.21	QV	|	|	|	|
5+35	0.0637	0.21	QV	|	|	|	|
5+40	0.0653	0.22	QV	|	|	|	|
5+45	0.0669	0.23	QV	|	|	|	|
5+50	0.0685	0.24	QV	|	|	|	|
5+55	0.0701	0.24	Q V	|	|	|	|
6+ 0	0.0717	0.24	Q V	|	|	|	|
6+ 5	0.0734	0.24	Q V	|	|	|	|
6+10	0.0752	0.25	|QV	|	|	|	|
6+15	0.0770	0.26	|QV	|	|	|	|
6+20	0.0788	0.27	|QV	|	|	|	|
6+25	0.0806	0.27	|QV	|	|	|	|
6+30	0.0825	0.27	|QV	|	|	|	|
6+35	0.0844	0.27	|QV	|	|	|	|
6+40	0.0863	0.28	|QV	|	|	|	|
6+45	0.0884	0.29	|QV	|	|	|	|
6+50	0.0904	0.30	|QV	|	|	|	|
6+55	0.0924	0.30	|QV	|	|	|	|
7+ 0	0.0945	0.30	|QV	|	|	|	|
7+ 5	0.0966	0.30	|QV	|	|	|	|
7+10	0.0986	0.30	|QV	|	|	|	|
7+15	0.1007	0.30	|QV	|	|	|	|
7+20	0.1028	0.30	|QV	|	|	|	|
7+25	0.1050	0.32	|Q V	|	|	|	|

```
  7+30      0.1072      0.32  |Q V      |          |          |          |
  7+35      0.1095      0.33  |Q V      |          |          |          |
  7+40      0.1118      0.34  |Q V      |          |          |          |
  7+45      0.1143      0.35  |Q V      |          |          |          |
  7+50      0.1167      0.36  |Q V      |          |          |          |
  7+55      0.1193      0.37  |Q V      |          |          |          |
  8+ 0      0.1219      0.38  |Q V      |          |          |          |
  8+ 5      0.1246      0.39  |Q V      |          |          |          |
  8+10      0.1275      0.42  |Q V      |          |          |          |
  8+15      0.1304      0.43  |Q V      |          |          |          |
  8+20      0.1335      0.44  |Q V      |          |          |          |
  8+25      0.1365      0.44  |Q V      |          |          |          |
  8+30      0.1396      0.45  |Q  V     |          |          |          |
  8+35      0.1427      0.45  |Q  V     |          |          |          |
  8+40      0.1459      0.46  |Q  V     |          |          |          |
  8+45      0.1491      0.47  |Q  V     |          |          |          |
  8+50      0.1524      0.48  |Q  V     |          |          |          |
  8+55      0.1558      0.49  |Q  V     |          |          |          |
  9+ 0      0.1593      0.50  | Q V     |          |          |          |
  9+ 5      0.1628      0.51  | Q V     |          |          |          |
  9+10      0.1665      0.54  | Q V     |          |          |          |
  9+15      0.1703      0.55  | Q V     |          |          |          |
  9+20      0.1742      0.56  | Q  V    |          |          |          |
  9+25      0.1782      0.58  | Q  V    |          |          |          |
  9+30      0.1823      0.59  | Q  V    |          |          |          |
  9+35      0.1864      0.60  | Q  V    |          |          |          |
  9+40      0.1906      0.61  | Q  V    |          |          |          |
  9+45      0.1949      0.62  | Q  V    |          |          |          |
  9+50      0.1992      0.63  | Q  V    |          |          |          |
  9+55      0.2036      0.64  | Q  V    |          |          |          |
 10+ 0      0.2081      0.65  | Q   V   |          |          |          |
 10+ 5      0.2125      0.63  | Q   V   |          |          |          |
 10+10      0.2163      0.55  | Q   V   |          |          |          |
 10+15      0.2198      0.51  | Q   V   |          |          |          |
 10+20      0.2231      0.49  |Q    V   |          |          |          |
 10+25      0.2264      0.48  |Q    V   |          |          |          |
 10+30      0.2297      0.47  |Q    V   |          |          |          |
 10+35      0.2330      0.48  |Q    V   |          |          |          |
 10+40      0.2366      0.53  | Q   V   |          |          |          |
 10+45      0.2405      0.57  | Q   V   |          |          |          |
 10+50      0.2445      0.58  | Q    V  |          |          |          |
 10+55      0.2486      0.59  | Q    V  |          |          |          |
 11+ 0      0.2526      0.59  | Q    V  |          |          |          |
 11+ 5      0.2567      0.59  | Q    V  |          |          |          |
 11+10      0.2607      0.58  | Q    V  |          |          |          |
 11+15      0.2647      0.58  | Q    V  |          |          |          |
 11+20      0.2687      0.58  | Q    V  |          |          |          |
 11+25      0.2726      0.58  | Q    V  |          |          |          |
 11+30      0.2766      0.58  | Q     V |          |          |          |
 11+35      0.2805      0.57  | Q     V |          |          |          |
 11+40      0.2843      0.54  | Q     V |          |          |          |
 11+45      0.2879      0.53  | Q     V |          |          |          |
 11+50      0.2915      0.53  | Q     V |          |          |          |
 11+55      0.2952      0.54  | Q     V |          |          |          |
 12+ 0      0.2989      0.54  | Q     V |          |          |          |
 12+ 5      0.3039      0.71  | Q     V |          |          |          |
 12+10      0.3134      1.39  |    Q   V|          |          |          |
 12+15      0.3259      1.81  |      Q V|          |          |          |
 12+20      0.3398      2.02  |       QV|          |          |          |
 12+25      0.3553      2.25  |        QV          |          |          |
 12+30      0.3719      2.41  |        QV          |          |          |
 12+35      0.3896      2.57  |         QV         |          |          |
 12+40      0.4094      2.88  |         |Q         |          |          |
 12+45      0.4306      3.08  |         | Q        |          |          |
 12+50      0.4528      3.22  |         | QV       |          |          |
 12+55      0.4763      3.41  |         |  Q       |          |          |
 13+ 0      0.5008      3.55  |         |   Q      |          |          |
 13+ 5      0.5268      3.78  |         |    Q     |          |          |
 13+10      0.5572      4.42  |         |     VQ   |          |          |
 13+15      0.5905      4.83  |         |      V Q|          |          |
 13+20      0.6250      5.01  |         |       V Q          |          |
 13+25      0.6603      5.13  |         |         VQ         |          |
 13+30      0.6962      5.22  |         |          Q         |          |
```

```
13+35    0.7303    4.95  |          |          Q|V         |          |
13+40    0.7559    3.71  |          |    Q      |V         |          |
13+45    0.7763    2.97  |          |Q          | V        |          |
13+50    0.7950    2.70  |          Q           |  V       |          |
13+55    0.8125    2.55  |          Q           |  V       |          |
14+ 0    0.8295    2.47  |         Q|           |   V      |          |
14+ 5    0.8470    2.53  |          Q           |   V      |          |
14+10    0.8673    2.96  |          |Q          |    V     |          |
14+15    0.8895    3.22  |          | Q         |    V     |          |
14+20    0.9122    3.29  |          |  Q        |     V    |          |
14+25    0.9346    3.24  |          | Q         |      V   |          |
14+30    0.9567    3.21  |          | Q         |      V   |          |
14+35    0.9790    3.24  |          | Q         |       V  |          |
14+40    1.0015    3.27  |          |  Q        |        V |          |
14+45    1.0242    3.30  |          |  Q        |        V |          |
14+50    1.0469    3.29  |          |  Q        |         V|          |
14+55    1.0689    3.20  |          | Q         |          |V         |
15+ 0    1.0907    3.16  |          | Q         |          |V         |
15+ 5    1.1122    3.12  |          | Q         |          | V        |
15+10    1.1329    3.01  |          | Q         |          | V        |
15+15    1.1532    2.95  |          |Q          |          |  V       |
15+20    1.1732    2.90  |          |Q          |          |   V      |
15+25    1.1924    2.78  |          |Q          |          |   V      |
15+30    1.2111    2.72  |          Q           |          |    V     |
15+35    1.2289    2.58  |          Q           |          |    V     |
15+40    1.2434    2.11  |        Q |           |          |     V    |
15+45    1.2560    1.82  |       Q  |           |          |     V    |
15+50    1.2678    1.72  |      Q   |           |          |     V    |
15+55    1.2793    1.67  |      Q   |           |          |      V   |
16+ 0    1.2906    1.64  |      Q   |           |          |      V   |
16+ 5    1.3008    1.48  |     Q    |           |          |      V   |
16+10    1.3070    0.90  |  Q       |           |          |       V  |
16+15    1.3107    0.54  | Q        |           |          |       V  |
16+20    1.3134    0.39  |Q         |           |          |       V  |
16+25    1.3155    0.30  |Q         |           |          |       V  |
16+30    1.3172    0.24  Q          |           |          |       V  |
16+35    1.3186    0.20  Q          |           |          |       V  |
16+40    1.3197    0.16  Q          |           |          |       V  |
16+45    1.3206    0.14  Q          |           |          |       V  |
16+50    1.3214    0.12  Q          |           |          |       V  |
16+55    1.3222    0.11  Q          |           |          |       V  |
17+ 0    1.3228    0.09  Q          |           |          |       V  |
17+ 5    1.3235    0.10  Q          |           |          |       V  |
17+10    1.3243    0.12  Q          |           |          |       V  |
17+15    1.3253    0.14  Q          |           |          |       V  |
17+20    1.3262    0.14  Q          |           |          |       V  |
17+25    1.3272    0.14  Q          |           |          |       V  |
17+30    1.3282    0.15  Q          |           |          |       V  |
17+35    1.3292    0.15  Q          |           |          |       V  |
17+40    1.3303    0.15  Q          |           |          |       V  |
17+45    1.3313    0.15  Q          |           |          |       V  |
17+50    1.3323    0.15  Q          |           |          |       V  |
17+55    1.3332    0.14  Q          |           |          |       V  |
18+ 0    1.3341    0.13  Q          |           |          |       V  |
18+ 5    1.3350    0.13  Q          |           |          |       V  |
18+10    1.3358    0.12  Q          |           |          |       V  |
18+15    1.3367    0.12  Q          |           |          |       V  |
18+20    1.3375    0.12  Q          |           |          |       V  |
18+25    1.3384    0.12  Q          |           |          |       V  |
18+30    1.3392    0.12  Q          |           |          |       V  |
18+35    1.3400    0.12  Q          |           |          |       V  |
18+40    1.3408    0.11  Q          |           |          |       V  |
18+45    1.3414    0.10  Q          |           |          |        V|
18+50    1.3421    0.09  Q          |           |          |        V|
18+55    1.3426    0.08  Q          |           |          |        V|
19+ 0    1.3431    0.07  Q          |           |          |        V|
19+ 5    1.3436    0.07  Q          |           |          |        V|
19+10    1.3441    0.08  Q          |           |          |        V|
19+15    1.3447    0.09  Q          |           |          |        V|
19+20    1.3454    0.09  Q          |           |          |        V|
19+25    1.3461    0.10  Q          |           |          |        V|
19+30    1.3468    0.11  Q          |           |          |        V|
19+35    1.3476    0.11  Q          |           |          |        V|
```

19+40	1.3483	0.10	Q	|	|	|	V|
19+45	1.3489	0.10	Q	|	|	|	V|
19+50	1.3496	0.09	Q	|	|	|	V|
19+55	1.3501	0.08	Q	|	|	|	V|
20+ 0	1.3506	0.07	Q	|	|	|	V|
20+ 5	1.3511	0.07	Q	|	|	|	V|
20+10	1.3516	0.08	Q	|	|	|	V|
20+15	1.3522	0.09	Q	|	|	|	V|
20+20	1.3528	0.09	Q	|	|	|	V|
20+25	1.3534	0.09	Q	|	|	|	V|
20+30	1.3540	0.09	Q	|	|	|	V|
20+35	1.3546	0.09	Q	|	|	|	V|
20+40	1.3553	0.09	Q	|	|	|	V|
20+45	1.3559	0.09	Q	|	|	|	V|
20+50	1.3565	0.09	Q	|	|	|	V|
20+55	1.3570	0.08	Q	|	|	|	V|
21+ 0	1.3575	0.07	Q	|	|	|	V|
21+ 5	1.3579	0.07	Q	|	|	|	V|
21+10	1.3585	0.08	Q	|	|	|	V|
21+15	1.3591	0.08	Q	|	|	|	V|
21+20	1.3596	0.08	Q	|	|	|	V|
21+25	1.3602	0.07	Q	|	|	|	V|
21+30	1.3606	0.07	Q	|	|	|	V|
21+35	1.3611	0.07	Q	|	|	|	V|
21+40	1.3616	0.08	Q	|	|	|	V|
21+45	1.3622	0.08	Q	|	|	|	V|
21+50	1.3628	0.08	Q	|	|	|	V|
21+55	1.3633	0.07	Q	|	|	|	V|
22+ 0	1.3637	0.07	Q	|	|	|	V|
22+ 5	1.3642	0.07	Q	|	|	|	V|
22+10	1.3647	0.08	Q	|	|	|	V|
22+15	1.3653	0.08	Q	|	|	|	V|
22+20	1.3659	0.08	Q	|	|	|	V|
22+25	1.3664	0.07	Q	|	|	|	V|
22+30	1.3668	0.07	Q	|	|	|	V|
22+35	1.3673	0.06	Q	|	|	|	V|
22+40	1.3677	0.06	Q	|	|	|	V|
22+45	1.3681	0.06	Q	|	|	|	V|
22+50	1.3686	0.06	Q	|	|	|	V|
22+55	1.3690	0.06	Q	|	|	|	V|
23+ 0	1.3694	0.06	Q	|	|	|	V|
23+ 5	1.3698	0.06	Q	|	|	|	V|
23+10	1.3702	0.06	Q	|	|	|	V|
23+15	1.3707	0.06	Q	|	|	|	V|
23+20	1.3711	0.06	Q	|	|	|	V|
23+25	1.3715	0.06	Q	|	|	|	V|
23+30	1.3719	0.06	Q	|	|	|	V|
23+35	1.3723	0.06	Q	|	|	|	V|
23+40	1.3727	0.06	Q	|	|	|	V|
23+45	1.3732	0.06	Q	|	|	|	V|
23+50	1.3736	0.06	Q	|	|	|	V|
23+55	1.3740	0.06	Q	|	|	|	V|
24+ 0	1.3744	0.06	Q	|	|	|	V|
24+ 5	1.3748	0.05	Q	|	|	|	V|
24+10	1.3750	0.03	Q	|	|	|	V|
24+15	1.3751	0.02	Q	|	|	|	V|
24+20	1.3752	0.01	Q	|	|	|	V|
24+25	1.3752	0.01	Q	|	|	|	V|
24+30	1.3753	0.01	Q	|	|	|	V|
24+35	1.3753	0.00	Q	|	|	|	V|
24+40	1.3753	0.00	Q	|	|	|	V|
24+45	1.3753	0.00	Q	|	|	|	V|
24+50	1.3753	0.00	Q	|	|	|	V|
24+55	1.3753	0.00	Q	|	|	|	V

- **Area 'B' – 100 Year 1 Hour Existing Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: exb1001100.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 6407

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
EXISTING CONDITION UNIT HYDROGRAPH - 100 YEAR 1 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
Drainage Area =      15.70(Ac.)  =      0.025 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      15.70(Ac.)  =      0.025 Sq. Mi.
Length along longest watercourse =    1928.00(Ft.)
Length along longest watercourse measured to centroid =     884.00(Ft.)
Length along longest watercourse =      0.365 Mi.
Length along longest watercourse measured to centroid =      0.167 Mi.
Difference in elevation =      15.00(Ft.)
Slope along watercourse =     41.0788 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time =    0.123 Hr.
Lag time =     7.37 Min.
25% of lag time =     1.84 Min.
40% of lag time =     2.95 Min.
Unit time =     5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           0.55                 8.63

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           1.45                22.76

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    0.550(In)
Area Averaged 100-Year Rainfall =    1.450(In)

Point rain (area averaged) =    1.450(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    1.450(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    15.700           70.40         0.000
 Total Area Entered =     15.70(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
```

```
      AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
      70.4  85.2      0.184     0.000        0.184       1.000      0.184
                                                       Sum (F) =    0.184
      Area averaged mean soil loss (F) (In/Hr) =  0.184
      Minimum soil loss rate ((In/Hr)) =  0.092
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.900
      ------------------------------------------------------------------------
      Slope of intensity-duration curve for a 1 hour storm =0.4800
      ------------------------------------------------------------------------

                  U n i t  H y d r o g r a p h
                         VALLEY S-Curve
      ------------------------------------------------------------------------
                  Unit Hydrograph Data
      ------------------------------------------------------------------------
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
          (hrs)                          Graph %            (CFS)
      ------------------------------------------------------------------------
          1   0.083         67.808         10.072              1.594
          2   0.167        135.617         38.920              6.158
          3   0.250        203.425         23.906              3.783
          4   0.333        271.233          9.226              1.460
          5   0.417        339.042          5.609              0.887
          6   0.500        406.850          3.758              0.595
          7   0.583        474.658          2.504              0.396
          8   0.667        542.467          1.955              0.309
          9   0.750        610.275          1.419              0.225
         10   0.833        678.083          1.025              0.162
         11   0.917        745.891          0.725              0.115
         12   1.000        813.700          0.880              0.139
                                    Sum = 100.000   Sum=      15.823
------------------------------------------------------------------------

 The following loss rate calculations reflect use of the minimum calculated loss
 rate subtracted from the Storm Rain to produce the maximum Effective Rain value

  Unit Time   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)         Max   |   Low         (In/Hr)
   1   0.08     4.40      0.765          0.184    (  0.689)        0.581
   2   0.17     4.50      0.783          0.184    (  0.705)        0.599
   3   0.25     5.40      0.939          0.184    (  0.846)        0.755
   4   0.33     5.40      0.939          0.184    (  0.846)        0.755
   5   0.42     5.70      0.992          0.184    (  0.892)        0.807
   6   0.50     6.40      1.113          0.184    (  1.002)        0.929
   7   0.58     7.90      1.374          0.184    (  1.237)        1.190
   8   0.67     9.10      1.583          0.184    (  1.425)        1.399
   9   0.75    12.80      2.227          0.184    (  2.004)        2.043
  10   0.83    25.60      4.454          0.184    (  4.008)        4.270
  11   0.92     7.90      1.374          0.184    (  1.237)        1.190
  12   1.00     4.90      0.852          0.184    (  0.767)        0.668
               (Loss Rate Not Used)
     Sum =     100.0                                  Sum =    15.2
       Flood volume = Effective rainfall      1.27(In)
        times area      15.7(Ac.)/[(In)/(Ft.)] =       1.7(Ac.Ft)
       Total soil loss =      0.18(In)
       Total soil loss =     0.241(Ac.Ft)
       Total rainfall =      1.45(In)
       Flood volume =       72123.8 Cubic Feet
       Total soil loss =       10501.4 Cubic Feet
       ---------------------------------------------------------------------
        Peak flow rate of this hydrograph =     40.474(CFS)
       ---------------------------------------------------------------------
       +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                           1 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
       ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

       ---------------------------------------------------------------------
  Time(h+m) Volume Ac.Ft   Q(CFS)  0       12.5      25.0      37.5      50.0
  ------------------------------------------------------------------------
```

```
   0+ 5       0.0064      0.93  Q          |          |          |          |
   0+10       0.0376      4.54  V  Q       |          |          |          |
   0+15       0.0865      7.09  | V  Q     |          |          |          |
   0+20       0.1483      8.97  |  V   Q   |          |          |          |
   0+25       0.2184     10.19  |     V  Q |          |          |          |
   0+30       0.2962     11.29  |       V Q|          |          |          |
   0+35       0.3860     13.04  |         VQ          |          |          |
   0+40       0.4948     15.80  |           |VQ       |          |          |
   0+45       0.6292     19.52  |           |    Q    |          |          |
   0+50       0.8255     28.49  |           |         V| Q       |          |
   0+55       1.1042     40.47  |           |          |     V    | Q        |
   1+ 0       1.3146     30.55  |           |          |   Q      |V         |
   1+ 5       1.4436     18.74  |           |   Q      |          |   V      |
   1+10       1.5175     10.73  |        Q  |          |          |     V    |
   1+15       1.5618      6.43  |     Q     |          |          |      V   |
   1+20       1.5918      4.35  |   Q       |          |          |       V  |
   1+25       1.6134      3.14  | Q         |          |          |       V  |
   1+30       1.6289      2.25  |Q          |          |          |        V |
   1+35       1.6399      1.60  |Q          |          |          |        V |
   1+40       1.6476      1.12  Q           |          |          |        V |
   1+45       1.6534      0.84  Q           |          |          |        V |
   1+50       1.6551      0.24  Q           |          |          |        V |
   1+55       1.6557      0.09  Q           |          |          |        V |
-------------------------------------------------------------------------
```

- **Area 'B' – 100 Year 3 Hour Existing Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: exb1003100.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6407

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format

------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
EXISTING CONDITION UNIT HYDROGRAPH - 100 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
Drainage Area =      15.70(Ac.)  =      0.025 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      15.70(Ac.)  =      0.025 Sq. Mi.
Length along longest watercourse =    1928.00(Ft.)
Length along longest watercourse measured to centroid =     884.00(Ft.)
Length along longest watercourse =      0.365 Mi.
Length along longest watercourse measured to centroid =      0.167 Mi.
Difference in elevation =      15.00(Ft.)
Slope along watercourse =     41.0788 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time =    0.123 Hr.
Lag time =     7.37 Min.
25% of lag time =     1.84 Min.
40% of lag time =     2.95 Min.
Unit time =     5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           1.00                 15.70

100 YEAR Area rainfall data:

Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           2.50                 39.25

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    1.000(In)
Area Averaged 100-Year Rainfall =    2.500(In)

Point rain (area averaged) =    2.500(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    2.500(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    15.700           70.40          0.000
 Total Area Entered =     15.70(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
70.4  85.2      0.184     0.000        0.184       1.000      0.184
                                                  Sum (F) =   0.184
Area averaged mean soil loss (F) (In/Hr) =  0.184
Minimum soil loss rate ((In/Hr)) =  0.092
```

(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	67.808	10.072	1.594
2	0.167	135.617	38.920	6.158
3	0.250	203.425	23.906	3.783
4	0.333	271.233	9.226	1.460
5	0.417	339.042	5.609	0.887
6	0.500	406.850	3.758	0.595
7	0.583	474.658	2.504	0.396
8	0.667	542.467	1.955	0.309
9	0.750	610.275	1.419	0.225
10	0.833	678.083	1.025	0.162
11	0.917	745.891	0.725	0.115
12	1.000	813.700	0.880	0.139
		Sum = 100.000	Sum=	15.823

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.390	0.184	(0.351)	0.206
2	0.17	1.30	0.390	0.184	(0.351)	0.206
3	0.25	1.10	0.330	0.184	(0.297)	0.146
4	0.33	1.50	0.450	0.184	(0.405)	0.266
5	0.42	1.50	0.450	0.184	(0.405)	0.266
6	0.50	1.80	0.540	0.184	(0.486)	0.356
7	0.58	1.50	0.450	0.184	(0.405)	0.266
8	0.67	1.80	0.540	0.184	(0.486)	0.356
9	0.75	1.80	0.540	0.184	(0.486)	0.356
10	0.83	1.50	0.450	0.184	(0.405)	0.266
11	0.92	1.60	0.480	0.184	(0.432)	0.296
12	1.00	1.80	0.540	0.184	(0.486)	0.356
13	1.08	2.20	0.660	0.184	(0.594)	0.476
14	1.17	2.20	0.660	0.184	(0.594)	0.476
15	1.25	2.20	0.660	0.184	(0.594)	0.476
16	1.33	2.00	0.600	0.184	(0.540)	0.416
17	1.42	2.60	0.780	0.184	(0.702)	0.596
18	1.50	2.70	0.810	0.184	(0.729)	0.626
19	1.58	2.40	0.720	0.184	(0.648)	0.536
20	1.67	2.70	0.810	0.184	(0.729)	0.626
21	1.75	3.30	0.990	0.184	(0.891)	0.806
22	1.83	3.10	0.930	0.184	(0.837)	0.746
23	1.92	2.90	0.870	0.184	(0.783)	0.686
24	2.00	3.00	0.900	0.184	(0.810)	0.716
25	2.08	3.10	0.930	0.184	(0.837)	0.746
26	2.17	4.20	1.260	0.184	(1.134)	1.076
27	2.25	5.00	1.500	0.184	(1.350)	1.316
28	2.33	3.50	1.050	0.184	(0.945)	0.866
29	2.42	6.80	2.040	0.184	(1.836)	1.856
30	2.50	7.30	2.190	0.184	(1.971)	2.006
31	2.58	8.20	2.460	0.184	(2.214)	2.276
32	2.67	5.90	1.770	0.184	(1.593)	1.586
33	2.75	2.00	0.600	0.184	(0.540)	0.416
34	2.83	1.80	0.540	0.184	(0.486)	0.356
35	2.92	1.80	0.540	0.184	(0.486)	0.356
36	3.00	0.60	0.180	(0.184)	0.162	0.018
		(Loss Rate Not Used)				
Sum =	100.0				Sum =	23.4

Flood volume = Effective rainfall 1.95(In)
times area 15.7(Ac.)/[(In)/(Ft.)] = 2.5(Ac.Ft)
Total soil loss = 0.55(In)

```
      Total soil loss =     0.721(Ac.Ft)
      Total rainfall =      2.50(In)
      Flood volume =      111069.3 Cubic Feet
      Total soil loss =       31398.4 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =     29.528(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          3 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
 ---------------------------------------------------------------------------
   0+ 5       0.0023      0.33  Q         |         |         |         |
   0+10       0.0132      1.60  V Q       |         |         |         |
   0+15       0.0289      2.28  V  Q      |         |         |         |
   0+20       0.0455      2.40  V  Q      |         |         |         |
   0+25       0.0668      3.10  |V  Q      |         |         |         |
   0+30       0.0925      3.73  |V  Q      |         |         |         |
   0+35       0.1224      4.34  |V   Q     |         |         |         |
   0+40       0.1527      4.41  | V  Q     |         |         |         |
   0+45       0.1861      4.85  | V   Q    |         |         |         |
   0+50       0.2209      5.05  |  V  Q    |         |         |         |
   0+55       0.2532      4.70  |  V  Q    |         |         |         |
   1+ 0       0.2859      4.75  |   V Q    |         |         |         |
   1+ 5       0.3228      5.35  |    V Q   |         |         |         |
   1+10       0.3662      6.31  |    V  Q  |         |         |         |
   1+15       0.4135      6.87  |     V  Q |         |         |         |
   1+20       0.4617      7.00  |      V Q |         |         |         |
   1+25       0.5103      7.06  |       VQ |         |         |         |
   1+30       0.5659      8.07  |       V Q|         |         |         |
   1+35       0.6263      8.77  |        V|Q         |         |         |
   1+40       0.6865      8.73  |         VQ         |         |         |
   1+45       0.7514      9.43  |          |VQ       |         |         |
   1+50       0.8257     10.79  |          | V Q     |         |         |
   1+55       0.9025     11.15  |          |   Q     |         |         |
   2+ 0       0.9780     10.96  |          |   QV    |         |         |
   2+ 5       1.0545     11.10  |          |   Q V   |         |         |
   2+10       1.1366     11.93  |          |    Q V  |         |         |
   2+15       1.2365     14.51  |          |       Q |         |         |
   2+20       1.3509     16.62  |          |         |VQ       |         |
   2+25       1.4671     16.86  |          |         | QV      |         |
   2+30       1.6198     22.17  |          |         |    V   Q|         |
   2+35       1.8061     27.05  |          |         |       V |     Q   |
   2+40       2.0094     29.53  |          |         |         |V       Q|
   2+45       2.1848     25.46  |          |         |         |  QV     |
   2+50       2.2993     16.63  |          |         | Q       |    V    |
   2+55       2.3786     11.52  |          |    Q    |         |     V   |
   3+ 0       2.4402      8.94  |          |Q        |         |       V |
   3+ 5       2.4792      5.67  |       Q  |         |         |       V |
   3+10       2.5035      3.52  |   Q      |         |         |         V|
   3+15       2.5199      2.38  |  Q       |         |         |         V|
   3+20       2.5316      1.71  | Q        |         |         |         V|
   3+25       2.5396      1.15  |Q         |         |         |         V|
   3+30       2.5448      0.76  |Q         |         |         |         V|
   3+35       2.5477      0.41  Q          |         |         |         V|
   3+40       2.5488      0.16  Q          |         |         |         V|
   3+45       2.5494      0.09  Q          |         |         |         V|
   3+50       2.5498      0.05  Q          |         |         |         V|
   3+55       2.5498      0.00  Q          |         |         |          V
---------------------------------------------------------------------------
```

- **Area 'B' – 100 Year 6 Hour Existing Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: exb1006100.out

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6407

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format

------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
EXISTING CONDITION UNIT HYDROGRAPH - 100 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
Drainage Area =      15.70(Ac.)  =      0.025 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      15.70(Ac.)  =      0.025 Sq. Mi.
Length along longest watercourse =    1928.00(Ft.)
Length along longest watercourse measured to centroid =     884.00(Ft.)
Length along longest watercourse =      0.365 Mi.
Length along longest watercourse measured to centroid =      0.167 Mi.
Difference in elevation =      15.00(Ft.)
Slope along watercourse =     41.0788 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time =    0.123 Hr.
Lag time =     7.37 Min.
25% of lag time =     1.84 Min.
40% of lag time =     2.95 Min.
Unit time =     5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           1.40                 21.98

100 YEAR Area rainfall data:

Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           3.00                 47.10

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    1.400(In)
Area Averaged 100-Year Rainfall =    3.000(In)

Point rain (area averaged) =    3.000(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    3.000(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    15.700           70.40         0.000
 Total Area Entered =     15.70(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
70.4  85.2      0.184     0.000        0.184       1.000      0.184
                                                 Sum (F) =   0.184
Area averaged mean soil loss (F) (In/Hr) =  0.184
Minimum soil loss rate ((In/Hr)) =  0.092
(for 24 hour storm duration)
```

Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	67.808	10.072	1.594
2	0.167	135.617	38.920	6.158
3	0.250	203.425	23.906	3.783
4	0.333	271.233	9.226	1.460
5	0.417	339.042	5.609	0.887
6	0.500	406.850	3.758	0.595
7	0.583	474.658	2.504	0.396
8	0.667	542.467	1.955	0.309
9	0.750	610.275	1.419	0.225
10	0.833	678.083	1.025	0.162
11	0.917	745.891	0.725	0.115
12	1.000	813.700	0.880	0.139
			Sum = 100.000	Sum= 15.823

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.180	(0.184)	0.162	0.018
2	0.17	0.60	0.216	0.184	(0.194)	0.032
3	0.25	0.60	0.216	0.184	(0.194)	0.032
4	0.33	0.60	0.216	0.184	(0.194)	0.032
5	0.42	0.60	0.216	0.184	(0.194)	0.032
6	0.50	0.70	0.252	0.184	(0.227)	0.068
7	0.58	0.70	0.252	0.184	(0.227)	0.068
8	0.67	0.70	0.252	0.184	(0.227)	0.068
9	0.75	0.70	0.252	0.184	(0.227)	0.068
10	0.83	0.70	0.252	0.184	(0.227)	0.068
11	0.92	0.70	0.252	0.184	(0.227)	0.068
12	1.00	0.80	0.288	0.184	(0.259)	0.104
13	1.08	0.80	0.288	0.184	(0.259)	0.104
14	1.17	0.80	0.288	0.184	(0.259)	0.104
15	1.25	0.80	0.288	0.184	(0.259)	0.104
16	1.33	0.80	0.288	0.184	(0.259)	0.104
17	1.42	0.80	0.288	0.184	(0.259)	0.104
18	1.50	0.80	0.288	0.184	(0.259)	0.104
19	1.58	0.80	0.288	0.184	(0.259)	0.104
20	1.67	0.80	0.288	0.184	(0.259)	0.104
21	1.75	0.80	0.288	0.184	(0.259)	0.104
22	1.83	0.80	0.288	0.184	(0.259)	0.104
23	1.92	0.80	0.288	0.184	(0.259)	0.104
24	2.00	0.90	0.324	0.184	(0.292)	0.140
25	2.08	0.80	0.288	0.184	(0.259)	0.104
26	2.17	0.90	0.324	0.184	(0.292)	0.140
27	2.25	0.90	0.324	0.184	(0.292)	0.140
28	2.33	0.90	0.324	0.184	(0.292)	0.140
29	2.42	0.90	0.324	0.184	(0.292)	0.140
30	2.50	0.90	0.324	0.184	(0.292)	0.140
31	2.58	0.90	0.324	0.184	(0.292)	0.140
32	2.67	0.90	0.324	0.184	(0.292)	0.140
33	2.75	1.00	0.360	0.184	(0.324)	0.176
34	2.83	1.00	0.360	0.184	(0.324)	0.176
35	2.92	1.00	0.360	0.184	(0.324)	0.176
36	3.00	1.00	0.360	0.184	(0.324)	0.176
37	3.08	1.00	0.360	0.184	(0.324)	0.176
38	3.17	1.10	0.396	0.184	(0.356)	0.212
39	3.25	1.10	0.396	0.184	(0.356)	0.212
40	3.33	1.10	0.396	0.184	(0.356)	0.212
41	3.42	1.20	0.432	0.184	(0.389)	0.248
42	3.50	1.30	0.468	0.184	(0.421)	0.284

```
 43   3.58     1.40      0.504          0.184    (  0.454)        0.320
 44   3.67     1.40      0.504          0.184    (  0.454)        0.320
 45   3.75     1.50      0.540          0.184    (  0.486)        0.356
 46   3.83     1.50      0.540          0.184    (  0.486)        0.356
 47   3.92     1.60      0.576          0.184    (  0.518)        0.392
 48   4.00     1.60      0.576          0.184    (  0.518)        0.392
 49   4.08     1.70      0.612          0.184    (  0.551)        0.428
 50   4.17     1.80      0.648          0.184    (  0.583)        0.464
 51   4.25     1.90      0.684          0.184    (  0.616)        0.500
 52   4.33     2.00      0.720          0.184    (  0.648)        0.536
 53   4.42     2.10      0.756          0.184    (  0.680)        0.572
 54   4.50     2.10      0.756          0.184    (  0.680)        0.572
 55   4.58     2.20      0.792          0.184    (  0.713)        0.608
 56   4.67     2.30      0.828          0.184    (  0.745)        0.644
 57   4.75     2.40      0.864          0.184    (  0.778)        0.680
 58   4.83     2.40      0.864          0.184    (  0.778)        0.680
 59   4.92     2.50      0.900          0.184    (  0.810)        0.716
 60   5.00     2.60      0.936          0.184    (  0.842)        0.752
 61   5.08     3.10      1.116          0.184    (  1.004)        0.932
 62   5.17     3.60      1.296          0.184    (  1.166)        1.112
 63   5.25     3.90      1.404          0.184    (  1.264)        1.220
 64   5.33     4.20      1.512          0.184    (  1.361)        1.328
 65   5.42     4.70      1.692          0.184    (  1.523)        1.508
 66   5.50     5.60      2.016          0.184    (  1.814)        1.832
 67   5.58     1.90      0.684          0.184    (  0.616)        0.500
 68   5.67     0.90      0.324          0.184    (  0.292)        0.140
 69   5.75     0.60      0.216          0.184    (  0.194)        0.032
 70   5.83     0.50      0.180       (  0.184)       0.162        0.018
 71   5.92     0.30      0.108       (  0.184)       0.097        0.011
 72   6.00     0.20      0.072       (  0.184)       0.065        0.007
               (Loss Rate Not Used)
    Sum =     100.0                                  Sum =    23.0
      Flood volume = Effective rainfall      1.92(In)
       times area      15.7(Ac.)/[(In)/(Ft.)] =       2.5(Ac.Ft)
      Total soil loss =      1.08(In)
      Total soil loss =     1.419(Ac.Ft)
      Total rainfall =      3.00(In)
      Flood volume =      109147.9 Cubic Feet
      Total soil loss =       61815.9 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =     22.512(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                           6 - H O U R    S T O R M
                        R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                    Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
-------------------------------------------------------------------------
  0+ 5       0.0002      0.03  Q         |         |         |         |
  0+10       0.0013      0.16  Q         |         |         |         |
  0+15       0.0035      0.31  Q         |         |         |         |
  0+20       0.0062      0.39  Q         |         |         |         |
  0+25       0.0091      0.43  Q         |         |         |         |
  0+30       0.0126      0.51  Q         |         |         |         |
  0+35       0.0178      0.75  Q         |         |         |         |
  0+40       0.0239      0.89  VQ        |         |         |         |
  0+45       0.0305      0.95  VQ        |         |         |         |
  0+50       0.0373      0.99  VQ        |         |         |         |
  0+55       0.0443      1.02  VQ        |         |         |         |
  1+ 0       0.0519      1.09  VQ        |         |         |         |
  1+ 5       0.0610      1.33  VQ        |         |         |         |
  1+10       0.0711      1.47  |Q        |         |         |         |
  1+15       0.0817      1.53  |VQ       |         |         |         |
  1+20       0.0925      1.57  |VQ       |         |         |         |
  1+25       0.1035      1.59  |VQ       |         |         |         |
  1+30       0.1145      1.61  |VQ       |         |         |         |
  1+35       0.1257      1.62  | Q       |         |         |         |
  1+40       0.1369      1.63  | Q       |         |         |         |
  1+45       0.1481      1.63  | Q       |         |         |         |
  1+50       0.1594      1.64  | Q       |         |         |         |
```

```
   1+55       0.1707      1.64  | Q       |         |         |         |
   2+ 0       0.1824      1.70  | Q       |         |         |         |
   2+ 5       0.1953      1.86  | QV      |         |         |         |
   2+10       0.2079      1.84  | QV      |         |         |         |
   2+15       0.2215      1.97  | QV      |         |         |         |
   2+20       0.2359      2.09  | QV      |         |         |         |
   2+25       0.2506      2.13  | QV      |         |         |         |
   2+30       0.2654      2.16  | Q V     |         |         |         |
   2+35       0.2804      2.17  | Q V     |         |         |         |
   2+40       0.2954      2.19  | Q V     |         |         |         |
   2+45       0.3109      2.25  |  QV     |         |         |         |
   2+50       0.3280      2.48  |  Q V    |         |         |         |
   2+55       0.3461      2.62  |  Q V    |         |         |         |
   3+ 0       0.3645      2.67  |  Q V    |         |         |         |
   3+ 5       0.3832      2.71  |  Q  V   |         |         |         |
   3+10       0.4024      2.79  |  Q  V   |         |         |         |
   3+15       0.4233      3.03  |   Q V   |         |         |         |
   3+20       0.4451      3.17  |   Q  V  |         |         |         |
   3+25       0.4678      3.29  |   Q  V  |         |         |         |
   3+30       0.4926      3.61  |   Q  V  |         |         |         |
   3+35       0.5205      4.05  |    Q  V |         |         |         |
   3+40       0.5514      4.48  |    Q  V |         |         |         |
   3+45       0.5842      4.77  |     Q  V|         |         |         |
   3+50       0.6194      5.11  |     Q  V|         |         |         |
   3+55       0.6564      5.37  |      Q  V         |         |         |
   4+ 0       0.6956      5.70  |      Q  |V        |         |         |
   4+ 5       0.7367      5.96  |      Q  |V        |         |         |
   4+10       0.7804      6.34  |       Q | V       |         |         |
   4+15       0.8273      6.82  |        Q|  V      |         |         |
   4+20       0.8778      7.34  |        Q|   V     |         |         |
   4+25       0.9320      7.87  |         Q   V     |         |         |
   4+30       0.9896      8.35  |         |Q   V    |         |         |
   4+35       1.0493      8.68  |         |Q    V   |         |         |
   4+40       1.1120      9.10  |         | Q    V  |         |         |
   4+45       1.1782      9.61  |         | Q     V |         |         |
   4+50       1.2476     10.08  |         |  Q     V|         |         |
   4+55       1.3193     10.40  |         |  Q      |V        |         |
   5+ 0       1.3938     10.82  |         |   Q     | V       |         |
   5+ 5       1.4734     11.56  |         |    Q    |  V      |         |
   5+10       1.5644     13.21  |         |      Q  |   V     |         |
   5+15       1.6697     15.30  |         |         Q     V   |         |
   5+20       1.7879     17.16  |         |         | Q     V |         |
   5+25       1.9188     19.00  |         |         |    Q    V         |
   5+30       2.0668     21.50  |         |         |       Q | V       |
   5+35       2.2219     22.51  |         |         |         Q    V    |
   5+40       2.3288     15.53  |         |         Q         |      V  |
   5+45       2.3904      8.94  |         |Q        |         |       V |
   5+50       2.4282      5.50  |       Q |         |         |       V |
   5+55       2.4534      3.66  |    Q    |         |         |        V|
   6+ 0       2.4711      2.56  |  Q      |         |         |        V|
   6+ 5       2.4837      1.84  | Q       |         |         |        V|
   6+10       2.4924      1.27  |Q        |         |         |        V|
   6+15       2.4983      0.85  |Q        |         |         |        V|
   6+20       2.5022      0.56  Q         |         |         |        V|
   6+25       2.5047      0.36  Q         |         |         |        V|
   6+30       2.5054      0.10  Q         |         |         |        V|
   6+35       2.5056      0.03  Q         |         |         |        V|
   6+40       2.5056      0.01  Q         |         |         |        V|
   6+45       2.5057      0.00  Q         |         |         |        V|
   6+50       2.5057      0.00  Q         |         |         |        V|
   6+55       2.5057      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- **Area 'B' – 100 Year 24 Hour Existing Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: exb10024100.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 6407

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
EXISTING CONDITION UNIT HYDROGRAPH - 100 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
Drainage Area =      15.70(Ac.)  =      0.025 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      15.70(Ac.)  =      0.025 Sq. Mi.
Length along longest watercourse =    1928.00(Ft.)
Length along longest watercourse measured to centroid =     884.00(Ft.)
Length along longest watercourse =      0.365 Mi.
Length along longest watercourse measured to centroid =      0.167 Mi.
Difference in elevation =      15.00(Ft.)
Slope along watercourse =     41.0788 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time =    0.123 Hr.
Lag time =     7.37 Min.
25% of lag time =     1.84 Min.
40% of lag time =     2.95 Min.
Unit time =     5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           2.50                 39.25

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       15.70           8.00                125.60

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    2.500(In)
Area Averaged 100-Year Rainfall =    8.000(In)

Point rain (area averaged) =    8.000(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    8.000(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    15.700           70.40          0.000
 Total Area Entered =     15.70(Ac.)
```

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
70.4	85.2	0.184	0.000	0.184	1.000	0.184
					Sum (F) =	0.184

Area averaged mean soil loss (F) (In/Hr) = 0.184
Minimum soil loss rate ((In/Hr)) = 0.092
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	67.808	10.072	1.594
2	0.167	135.617	38.920	6.158
3	0.250	203.425	23.906	3.783
4	0.333	271.233	9.226	1.460
5	0.417	339.042	5.609	0.887
6	0.500	406.850	3.758	0.595
7	0.583	474.658	2.504	0.396
8	0.667	542.467	1.955	0.309
9	0.750	610.275	1.419	0.225
10	0.833	678.083	1.025	0.162
11	0.917	745.891	0.725	0.115
12	1.000	813.700	0.880	0.139
			Sum = 100.000 Sum=	15.823

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.064	(0.327)	0.058	0.006
2	0.17	0.07	0.064	(0.325)	0.058	0.006
3	0.25	0.07	0.064	(0.324)	0.058	0.006
4	0.33	0.10	0.096	(0.323)	0.086	0.010
5	0.42	0.10	0.096	(0.322)	0.086	0.010
6	0.50	0.10	0.096	(0.320)	0.086	0.010
7	0.58	0.10	0.096	(0.319)	0.086	0.010
8	0.67	0.10	0.096	(0.318)	0.086	0.010
9	0.75	0.10	0.096	(0.317)	0.086	0.010
10	0.83	0.13	0.128	(0.315)	0.115	0.013
11	0.92	0.13	0.128	(0.314)	0.115	0.013
12	1.00	0.13	0.128	(0.313)	0.115	0.013
13	1.08	0.10	0.096	(0.312)	0.086	0.010
14	1.17	0.10	0.096	(0.310)	0.086	0.010
15	1.25	0.10	0.096	(0.309)	0.086	0.010
16	1.33	0.10	0.096	(0.308)	0.086	0.010
17	1.42	0.10	0.096	(0.307)	0.086	0.010
18	1.50	0.10	0.096	(0.306)	0.086	0.010
19	1.58	0.10	0.096	(0.304)	0.086	0.010
20	1.67	0.10	0.096	(0.303)	0.086	0.010
21	1.75	0.10	0.096	(0.302)	0.086	0.010
22	1.83	0.13	0.128	(0.301)	0.115	0.013
23	1.92	0.13	0.128	(0.299)	0.115	0.013
24	2.00	0.13	0.128	(0.298)	0.115	0.013
25	2.08	0.13	0.128	(0.297)	0.115	0.013
26	2.17	0.13	0.128	(0.296)	0.115	0.013
27	2.25	0.13	0.128	(0.295)	0.115	0.013
28	2.33	0.13	0.128	(0.293)	0.115	0.013
29	2.42	0.13	0.128	(0.292)	0.115	0.013
30	2.50	0.13	0.128	(0.291)	0.115	0.013
31	2.58	0.17	0.160	(0.290)	0.144	0.016
32	2.67	0.17	0.160	(0.289)	0.144	0.016
33	2.75	0.17	0.160	(0.287)	0.144	0.016
34	2.83	0.17	0.160	(0.286)	0.144	0.016

35	2.92	0.17	0.160	(0.285)	0.144	0.016
36	3.00	0.17	0.160	(0.284)	0.144	0.016
37	3.08	0.17	0.160	(0.283)	0.144	0.016
38	3.17	0.17	0.160	(0.282)	0.144	0.016
39	3.25	0.17	0.160	(0.280)	0.144	0.016
40	3.33	0.17	0.160	(0.279)	0.144	0.016
41	3.42	0.17	0.160	(0.278)	0.144	0.016
42	3.50	0.17	0.160	(0.277)	0.144	0.016
43	3.58	0.17	0.160	(0.276)	0.144	0.016
44	3.67	0.17	0.160	(0.275)	0.144	0.016
45	3.75	0.17	0.160	(0.273)	0.144	0.016
46	3.83	0.20	0.192	(0.272)	0.173	0.019
47	3.92	0.20	0.192	(0.271)	0.173	0.019
48	4.00	0.20	0.192	(0.270)	0.173	0.019
49	4.08	0.20	0.192	(0.269)	0.173	0.019
50	4.17	0.20	0.192	(0.268)	0.173	0.019
51	4.25	0.20	0.192	(0.267)	0.173	0.019
52	4.33	0.23	0.224	(0.265)	0.202	0.022
53	4.42	0.23	0.224	(0.264)	0.202	0.022
54	4.50	0.23	0.224	(0.263)	0.202	0.022
55	4.58	0.23	0.224	(0.262)	0.202	0.022
56	4.67	0.23	0.224	(0.261)	0.202	0.022
57	4.75	0.23	0.224	(0.260)	0.202	0.022
58	4.83	0.27	0.256	(0.259)	0.230	0.026
59	4.92	0.27	0.256	(0.258)	0.230	0.026
60	5.00	0.27	0.256	(0.256)	0.230	0.026
61	5.08	0.20	0.192	(0.255)	0.173	0.019
62	5.17	0.20	0.192	(0.254)	0.173	0.019
63	5.25	0.20	0.192	(0.253)	0.173	0.019
64	5.33	0.23	0.224	(0.252)	0.202	0.022
65	5.42	0.23	0.224	(0.251)	0.202	0.022
66	5.50	0.23	0.224	(0.250)	0.202	0.022
67	5.58	0.27	0.256	(0.249)	0.230	0.026
68	5.67	0.27	0.256	(0.248)	0.230	0.026
69	5.75	0.27	0.256	(0.246)	0.230	0.026
70	5.83	0.27	0.256	(0.245)	0.230	0.026
71	5.92	0.27	0.256	(0.244)	0.230	0.026
72	6.00	0.27	0.256	(0.243)	0.230	0.026
73	6.08	0.30	0.288	0.242	(0.259)	0.046
74	6.17	0.30	0.288	0.241	(0.259)	0.047
75	6.25	0.30	0.288	0.240	(0.259)	0.048
76	6.33	0.30	0.288	0.239	(0.259)	0.049
77	6.42	0.30	0.288	0.238	(0.259)	0.050
78	6.50	0.30	0.288	0.237	(0.259)	0.051
79	6.58	0.33	0.320	0.236	(0.288)	0.084
80	6.67	0.33	0.320	0.235	(0.288)	0.085
81	6.75	0.33	0.320	0.234	(0.288)	0.086
82	6.83	0.33	0.320	0.233	(0.288)	0.087
83	6.92	0.33	0.320	0.231	(0.288)	0.088
84	7.00	0.33	0.320	0.230	(0.288)	0.090
85	7.08	0.33	0.320	0.229	(0.288)	0.091
86	7.17	0.33	0.320	0.228	(0.288)	0.092
87	7.25	0.33	0.320	0.227	(0.288)	0.093
88	7.33	0.37	0.352	0.226	(0.317)	0.126
89	7.42	0.37	0.352	0.225	(0.317)	0.127
90	7.50	0.37	0.352	0.224	(0.317)	0.128
91	7.58	0.40	0.384	0.223	(0.346)	0.161
92	7.67	0.40	0.384	0.222	(0.346)	0.162
93	7.75	0.40	0.384	0.221	(0.346)	0.163
94	7.83	0.43	0.416	0.220	(0.374)	0.196
95	7.92	0.43	0.416	0.219	(0.374)	0.197
96	8.00	0.43	0.416	0.218	(0.374)	0.198
97	8.08	0.50	0.480	0.217	(0.432)	0.263
98	8.17	0.50	0.480	0.216	(0.432)	0.264
99	8.25	0.50	0.480	0.215	(0.432)	0.265
100	8.33	0.50	0.480	0.214	(0.432)	0.266
101	8.42	0.50	0.480	0.213	(0.432)	0.267
102	8.50	0.50	0.480	0.212	(0.432)	0.268
103	8.58	0.53	0.512	0.211	(0.461)	0.301
104	8.67	0.53	0.512	0.210	(0.461)	0.302
105	8.75	0.53	0.512	0.209	(0.461)	0.303
106	8.83	0.57	0.544	0.208	(0.490)	0.336
107	8.92	0.57	0.544	0.207	(0.490)	0.337

108	9.00	0.57	0.544	0.206	(0.490)	0.338
109	9.08	0.63	0.608	0.205	(0.547)	0.403
110	9.17	0.63	0.608	0.204	(0.547)	0.404
111	9.25	0.63	0.608	0.203	(0.547)	0.405
112	9.33	0.67	0.640	0.202	(0.576)	0.438
113	9.42	0.67	0.640	0.201	(0.576)	0.439
114	9.50	0.67	0.640	0.200	(0.576)	0.440
115	9.58	0.70	0.672	0.199	(0.605)	0.473
116	9.67	0.70	0.672	0.198	(0.605)	0.474
117	9.75	0.70	0.672	0.197	(0.605)	0.475
118	9.83	0.73	0.704	0.196	(0.634)	0.508
119	9.92	0.73	0.704	0.196	(0.634)	0.508
120	10.00	0.73	0.704	0.195	(0.634)	0.509
121	10.08	0.50	0.480	0.194	(0.432)	0.286
122	10.17	0.50	0.480	0.193	(0.432)	0.287
123	10.25	0.50	0.480	0.192	(0.432)	0.288
124	10.33	0.50	0.480	0.191	(0.432)	0.289
125	10.42	0.50	0.480	0.190	(0.432)	0.290
126	10.50	0.50	0.480	0.189	(0.432)	0.291
127	10.58	0.67	0.640	0.188	(0.576)	0.452
128	10.67	0.67	0.640	0.187	(0.576)	0.453
129	10.75	0.67	0.640	0.186	(0.576)	0.454
130	10.83	0.67	0.640	0.185	(0.576)	0.455
131	10.92	0.67	0.640	0.184	(0.576)	0.456
132	11.00	0.67	0.640	0.183	(0.576)	0.456
133	11.08	0.63	0.608	0.183	(0.547)	0.425
134	11.17	0.63	0.608	0.182	(0.547)	0.426
135	11.25	0.63	0.608	0.181	(0.547)	0.427
136	11.33	0.63	0.608	0.180	(0.547)	0.428
137	11.42	0.63	0.608	0.179	(0.547)	0.429
138	11.50	0.63	0.608	0.178	(0.547)	0.430
139	11.58	0.57	0.544	0.177	(0.490)	0.367
140	11.67	0.57	0.544	0.176	(0.490)	0.368
141	11.75	0.57	0.544	0.175	(0.490)	0.368
142	11.83	0.60	0.576	0.175	(0.518)	0.401
143	11.92	0.60	0.576	0.174	(0.518)	0.402
144	12.00	0.60	0.576	0.173	(0.518)	0.403
145	12.08	0.83	0.800	0.172	(0.720)	0.628
146	12.17	0.83	0.800	0.171	(0.720)	0.629
147	12.25	0.83	0.800	0.170	(0.720)	0.630
148	12.33	0.87	0.832	0.169	(0.749)	0.663
149	12.42	0.87	0.832	0.169	(0.749)	0.663
150	12.50	0.87	0.832	0.168	(0.749)	0.664
151	12.58	0.93	0.896	0.167	(0.806)	0.729
152	12.67	0.93	0.896	0.166	(0.806)	0.730
153	12.75	0.93	0.896	0.165	(0.806)	0.731
154	12.83	0.97	0.928	0.164	(0.835)	0.764
155	12.92	0.97	0.928	0.164	(0.835)	0.764
156	13.00	0.97	0.928	0.163	(0.835)	0.765
157	13.08	1.13	1.088	0.162	(0.979)	0.926
158	13.17	1.13	1.088	0.161	(0.979)	0.927
159	13.25	1.13	1.088	0.160	(0.979)	0.928
160	13.33	1.13	1.088	0.159	(0.979)	0.929
161	13.42	1.13	1.088	0.159	(0.979)	0.929
162	13.50	1.13	1.088	0.158	(0.979)	0.930
163	13.58	0.77	0.736	0.157	(0.662)	0.579
164	13.67	0.77	0.736	0.156	(0.662)	0.580
165	13.75	0.77	0.736	0.155	(0.662)	0.581
166	13.83	0.77	0.736	0.155	(0.662)	0.581
167	13.92	0.77	0.736	0.154	(0.662)	0.582
168	14.00	0.77	0.736	0.153	(0.662)	0.583
169	14.08	0.90	0.864	0.152	(0.778)	0.712
170	14.17	0.90	0.864	0.151	(0.778)	0.712
171	14.25	0.90	0.864	0.151	(0.778)	0.713
172	14.33	0.87	0.832	0.150	(0.749)	0.682
173	14.42	0.87	0.832	0.149	(0.749)	0.683
174	14.50	0.87	0.832	0.148	(0.749)	0.684
175	14.58	0.87	0.832	0.148	(0.749)	0.684
176	14.67	0.87	0.832	0.147	(0.749)	0.685
177	14.75	0.87	0.832	0.146	(0.749)	0.686
178	14.83	0.83	0.800	0.145	(0.720)	0.655
179	14.92	0.83	0.800	0.145	(0.720)	0.655
180	15.00	0.83	0.800	0.144	(0.720)	0.656

181	15.08	0.80	0.768	0.143	(0.691)	0.625
182	15.17	0.80	0.768	0.142	(0.691)	0.626
183	15.25	0.80	0.768	0.142	(0.691)	0.626
184	15.33	0.77	0.736	0.141	(0.662)	0.595
185	15.42	0.77	0.736	0.140	(0.662)	0.596
186	15.50	0.77	0.736	0.140	(0.662)	0.596
187	15.58	0.63	0.608	0.139	(0.547)	0.469
188	15.67	0.63	0.608	0.138	(0.547)	0.470
189	15.75	0.63	0.608	0.137	(0.547)	0.471
190	15.83	0.63	0.608	0.137	(0.547)	0.471
191	15.92	0.63	0.608	0.136	(0.547)	0.472
192	16.00	0.63	0.608	0.135	(0.547)	0.473
193	16.08	0.13	0.128	(0.135)	0.115	0.013
194	16.17	0.13	0.128	(0.134)	0.115	0.013
195	16.25	0.13	0.128	(0.133)	0.115	0.013
196	16.33	0.13	0.128	(0.133)	0.115	0.013
197	16.42	0.13	0.128	(0.132)	0.115	0.013
198	16.50	0.13	0.128	(0.131)	0.115	0.013
199	16.58	0.10	0.096	(0.131)	0.086	0.010
200	16.67	0.10	0.096	(0.130)	0.086	0.010
201	16.75	0.10	0.096	(0.129)	0.086	0.010
202	16.83	0.10	0.096	(0.129)	0.086	0.010
203	16.92	0.10	0.096	(0.128)	0.086	0.010
204	17.00	0.10	0.096	(0.127)	0.086	0.010
205	17.08	0.17	0.160	0.127	(0.144)	0.033
206	17.17	0.17	0.160	0.126	(0.144)	0.034
207	17.25	0.17	0.160	0.125	(0.144)	0.035
208	17.33	0.17	0.160	0.125	(0.144)	0.035
209	17.42	0.17	0.160	0.124	(0.144)	0.036
210	17.50	0.17	0.160	0.123	(0.144)	0.037
211	17.58	0.17	0.160	0.123	(0.144)	0.037
212	17.67	0.17	0.160	0.122	(0.144)	0.038
213	17.75	0.17	0.160	0.122	(0.144)	0.038
214	17.83	0.13	0.128	(0.121)	0.115	0.013
215	17.92	0.13	0.128	(0.120)	0.115	0.013
216	18.00	0.13	0.128	(0.120)	0.115	0.013
217	18.08	0.13	0.128	(0.119)	0.115	0.013
218	18.17	0.13	0.128	(0.119)	0.115	0.013
219	18.25	0.13	0.128	(0.118)	0.115	0.013
220	18.33	0.13	0.128	(0.118)	0.115	0.013
221	18.42	0.13	0.128	(0.117)	0.115	0.013
222	18.50	0.13	0.128	(0.116)	0.115	0.013
223	18.58	0.10	0.096	(0.116)	0.086	0.010
224	18.67	0.10	0.096	(0.115)	0.086	0.010
225	18.75	0.10	0.096	(0.115)	0.086	0.010
226	18.83	0.07	0.064	(0.114)	0.058	0.006
227	18.92	0.07	0.064	(0.114)	0.058	0.006
228	19.00	0.07	0.064	(0.113)	0.058	0.006
229	19.08	0.10	0.096	(0.113)	0.086	0.010
230	19.17	0.10	0.096	(0.112)	0.086	0.010
231	19.25	0.10	0.096	(0.111)	0.086	0.010
232	19.33	0.13	0.128	0.111	(0.115)	0.017
233	19.42	0.13	0.128	0.110	(0.115)	0.018
234	19.50	0.13	0.128	0.110	(0.115)	0.018
235	19.58	0.10	0.096	(0.109)	0.086	0.010
236	19.67	0.10	0.096	(0.109)	0.086	0.010
237	19.75	0.10	0.096	(0.108)	0.086	0.010
238	19.83	0.07	0.064	(0.108)	0.058	0.006
239	19.92	0.07	0.064	(0.107)	0.058	0.006
240	20.00	0.07	0.064	(0.107)	0.058	0.006
241	20.08	0.10	0.096	(0.107)	0.086	0.010
242	20.17	0.10	0.096	(0.106)	0.086	0.010
243	20.25	0.10	0.096	(0.106)	0.086	0.010
244	20.33	0.10	0.096	(0.105)	0.086	0.010
245	20.42	0.10	0.096	(0.105)	0.086	0.010
246	20.50	0.10	0.096	(0.104)	0.086	0.010
247	20.58	0.10	0.096	(0.104)	0.086	0.010
248	20.67	0.10	0.096	(0.103)	0.086	0.010
249	20.75	0.10	0.096	(0.103)	0.086	0.010
250	20.83	0.07	0.064	(0.103)	0.058	0.006
251	20.92	0.07	0.064	(0.102)	0.058	0.006
252	21.00	0.07	0.064	(0.102)	0.058	0.006
253	21.08	0.10	0.096	(0.101)	0.086	0.010

```
254  21.17     0.10      0.096       (  0.101)       0.086        0.010
255  21.25     0.10      0.096       (  0.101)       0.086        0.010
256  21.33     0.07      0.064       (  0.100)       0.058        0.006
257  21.42     0.07      0.064       (  0.100)       0.058        0.006
258  21.50     0.07      0.064       (  0.099)       0.058        0.006
259  21.58     0.10      0.096       (  0.099)       0.086        0.010
260  21.67     0.10      0.096       (  0.099)       0.086        0.010
261  21.75     0.10      0.096       (  0.098)       0.086        0.010
262  21.83     0.07      0.064       (  0.098)       0.058        0.006
263  21.92     0.07      0.064       (  0.098)       0.058        0.006
264  22.00     0.07      0.064       (  0.097)       0.058        0.006
265  22.08     0.10      0.096       (  0.097)       0.086        0.010
266  22.17     0.10      0.096       (  0.097)       0.086        0.010
267  22.25     0.10      0.096       (  0.096)       0.086        0.010
268  22.33     0.07      0.064       (  0.096)       0.058        0.006
269  22.42     0.07      0.064       (  0.096)       0.058        0.006
270  22.50     0.07      0.064       (  0.095)       0.058        0.006
271  22.58     0.07      0.064       (  0.095)       0.058        0.006
272  22.67     0.07      0.064       (  0.095)       0.058        0.006
273  22.75     0.07      0.064       (  0.095)       0.058        0.006
274  22.83     0.07      0.064       (  0.094)       0.058        0.006
275  22.92     0.07      0.064       (  0.094)       0.058        0.006
276  23.00     0.07      0.064       (  0.094)       0.058        0.006
277  23.08     0.07      0.064       (  0.094)       0.058        0.006
278  23.17     0.07      0.064       (  0.094)       0.058        0.006
279  23.25     0.07      0.064       (  0.093)       0.058        0.006
280  23.33     0.07      0.064       (  0.093)       0.058        0.006
281  23.42     0.07      0.064       (  0.093)       0.058        0.006
282  23.50     0.07      0.064       (  0.093)       0.058        0.006
283  23.58     0.07      0.064       (  0.093)       0.058        0.006
284  23.67     0.07      0.064       (  0.093)       0.058        0.006
285  23.75     0.07      0.064       (  0.092)       0.058        0.006
286  23.83     0.07      0.064       (  0.092)       0.058        0.006
287  23.92     0.07      0.064       (  0.092)       0.058        0.006
288  24.00     0.07      0.064       (  0.092)       0.058        0.006
               (Loss Rate Not Used)
    Sum =     100.0                                  Sum =    55.2
      Flood volume = Effective rainfall      4.60(In)
       times area      15.7(Ac.)/[(In)/(Ft.)] =       6.0(Ac.Ft)
      Total soil loss =      3.40(In)
      Total soil loss =     4.443(Ac.Ft)
      Total rainfall =      8.00(In)
      Flood volume =      262377.0 Cubic Feet
      Total soil loss =      193537.0 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =     14.468(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
 ---------------------------------------------------------------------------
   0+ 5       0.0001      0.01  Q         |         |         |         |
   0+10       0.0004      0.05  Q         |         |         |         |
   0+15       0.0009      0.07  Q         |         |         |         |
   0+20       0.0015      0.09  Q         |         |         |         |
   0+25       0.0023      0.11  Q         |         |         |         |
   0+30       0.0032      0.13  Q         |         |         |         |
   0+35       0.0041      0.14  Q         |         |         |         |
   0+40       0.0051      0.14  Q         |         |         |         |
   0+45       0.0061      0.14  Q         |         |         |         |
   0+50       0.0072      0.15  Q         |         |         |         |
   0+55       0.0084      0.17  Q         |         |         |         |
   1+ 0       0.0097      0.19  Q         |         |         |         |
   1+ 5       0.0110      0.19  Q         |         |         |         |
   1+10       0.0121      0.17  Q         |         |         |         |
   1+15       0.0132      0.16  Q         |         |         |         |
   1+20       0.0143      0.16  Q         |         |         |         |
   1+25       0.0154      0.16  Q         |         |         |         |
```

1+30	0.0165	0.15	Q	|	|	|	|
1+35	0.0175	0.15	Q	|	|	|	|
1+40	0.0186	0.15	Q	|	|	|	|
1+45	0.0196	0.15	Q	|	|	|	|
1+50	0.0207	0.16	Q	|	|	|	|
1+55	0.0220	0.18	Q	|	|	|	|
2+ 0	0.0233	0.19	Q	|	|	|	|
2+ 5	0.0246	0.19	Q	|	|	|	|
2+10	0.0259	0.20	Q	|	|	|	|
2+15	0.0273	0.20	Q	|	|	|	|
2+20	0.0287	0.20	Q	|	|	|	|
2+25	0.0301	0.20	Q	|	|	|	|
2+30	0.0315	0.20	Q	|	|	|	|
2+35	0.0329	0.21	Q	|	|	|	|
2+40	0.0344	0.23	Q	|	|	|	|
2+45	0.0361	0.24	Q	|	|	|	|
2+50	0.0378	0.24	Q	|	|	|	|
2+55	0.0395	0.25	Q	|	|	|	|
3+ 0	0.0412	0.25	Q	|	|	|	|
3+ 5	0.0429	0.25	Q	|	|	|	|
3+10	0.0446	0.25	Q	|	|	|	|
3+15	0.0464	0.25	Q	|	|	|	|
3+20	0.0481	0.25	Q	|	|	|	|
3+25	0.0499	0.25	Q	|	|	|	|
3+30	0.0516	0.25	Q	|	|	|	|
3+35	0.0533	0.25	Q	|	|	|	|
3+40	0.0551	0.25	Q	|	|	|	|
3+45	0.0568	0.25	Q	|	|	|	|
3+50	0.0586	0.26	Q	|	|	|	|
3+55	0.0605	0.28	Q	|	|	|	|
4+ 0	0.0625	0.29	Q	|	|	|	|
4+ 5	0.0646	0.29	Q	|	|	|	|
4+10	0.0666	0.30	Q	|	|	|	|
4+15	0.0687	0.30	Q	|	|	|	|
4+20	0.0708	0.31	Q	|	|	|	|
4+25	0.0730	0.33	Q	|	|	|	|
4+30	0.0754	0.34	Q	|	|	|	|
4+35	0.0777	0.34	Q	|	|	|	|
4+40	0.0801	0.35	Q	|	|	|	|
4+45	0.0826	0.35	Q	|	|	|	|
4+50	0.0850	0.36	Q	|	|	|	|
4+55	0.0876	0.38	Q	|	|	|	|
5+ 0	0.0903	0.39	Q	|	|	|	|
5+ 5	0.0929	0.39	Q	|	|	|	|
5+10	0.0954	0.35	Q	|	|	|	|
5+15	0.0976	0.33	Q	|	|	|	|
5+20	0.0998	0.32	Q	|	|	|	|
5+25	0.1022	0.34	Q	|	|	|	|
5+30	0.1046	0.35	Q	|	|	|	|
5+35	0.1070	0.36	Q	|	|	|	|
5+40	0.1096	0.38	Q	|	|	|	|
5+45	0.1123	0.39	Q	|	|	|	|
5+50	0.1150	0.39	Q	|	|	|	|
5+55	0.1178	0.40	Q	|	|	|	|
6+ 0	0.1205	0.40	Q	|	|	|	|
6+ 5	0.1235	0.43	Q	|	|	|	|
6+10	0.1274	0.56	VQ	|	|	|	|
6+15	0.1318	0.65	VQ	|	|	|	|
6+20	0.1366	0.69	VQ	|	|	|	|
6+25	0.1416	0.72	VQ	|	|	|	|
6+30	0.1467	0.75	VQ	|	|	|	|
6+35	0.1524	0.82	|Q	|	|	|	|
6+40	0.1596	1.04	|VQ	|	|	|	|
6+45	0.1677	1.19	|VQ	|	|	|	|
6+50	0.1764	1.25	|VQ	|	|	|	|
6+55	0.1853	1.30	|VQ	|	|	|	|
7+ 0	0.1945	1.34	|VQ	|	|	|	|
7+ 5	0.2039	1.37	|VQ	|	|	|	|
7+10	0.2135	1.39	|VQ	|	|	|	|
7+15	0.2233	1.42	|VQ	|	|	|	|
7+20	0.2336	1.49	|VQ	|	|	|	|
7+25	0.2453	1.71	|V Q	|	|	|	|
7+30	0.2581	1.85	|V Q	|	|	|	|

```
 7+35      0.2716      1.96  |V Q      |         |         |         |
 7+40      0.2868      2.21  |V  Q     |         |         |         |
 7+45      0.3030      2.36  | V Q     |         |         |         |
 7+50      0.3202      2.49  | V Q     |         |         |         |
 7+55      0.3390      2.74  | V  Q    |         |         |         |
 8+ 0      0.3590      2.90  | V  Q    |         |         |         |
 8+ 5      0.3803      3.09  | V   Q   |         |         |         |
 8+10      0.4047      3.54  | V    Q  |         |         |         |
 8+15      0.4310      3.83  | V    Q  |         |         |         |
 8+20      0.4583      3.96  |  V   Q  |         |         |         |
 8+25      0.4861      4.04  |  V    Q |         |         |         |
 8+30      0.5144      4.11  |  V    Q |         |         |         |
 8+35      0.5433      4.20  |  V    Q |         |         |         |
 8+40      0.5739      4.44  |  V    Q |         |         |         |
 8+45      0.6056      4.60  |   V    Q|         |         |         |
 8+50      0.6381      4.72  |   V    Q|         |         |         |
 8+55      0.6723      4.97  |   V    Q|         |         |         |
 9+ 0      0.7077      5.13  |   V     Q         |         |         |
 9+ 5      0.7442      5.31  |   V     Q         |         |         |
 9+10      0.7839      5.76  |    V    |Q        |         |         |
 9+15      0.8255      6.04  |    V    | Q       |         |         |
 9+20      0.8684      6.22  |    V    | Q       |         |         |
 9+25      0.9132      6.50  |     V   |  Q      |         |         |
 9+30      0.9592      6.69  |     V   |  Q      |         |         |
 9+35      1.0063      6.83  |     V   |  Q      |         |         |
 9+40      1.0552      7.10  |      V  |   Q     |         |         |
 9+45      1.1053      7.27  |      V  |   Q     |         |         |
 9+50      1.1563      7.41  |      V  |   Q     |         |         |
 9+55      1.2091      7.67  |       V |    Q    |         |         |
10+ 0      1.2631      7.84  |       V |    Q    |         |         |
10+ 5      1.3151      7.56  |       V |    Q    |         |         |
10+10      1.3581      6.24  |        V| Q       |         |         |
10+15      1.3955      5.43  |        VQ         |         |         |
10+20      1.4309      5.14  |        VQ         |         |         |
10+25      1.4651      4.97  |        Q|         |         |         |
10+30      1.4986      4.86  |        Q|         |         |         |
10+35      1.5334      5.05  |         Q         |         |         |
10+40      1.5746      5.98  |         VQ        |         |         |
10+45      1.6197      6.56  |         V  Q      |         |         |
10+50      1.6664      6.77  |          |V Q     |         |         |
10+55      1.7139      6.90  |          |V Q     |         |         |
11+ 0      1.7620      6.98  |          |V Q     |         |         |
11+ 5      1.8102      7.01  |          | V Q    |         |         |
11+10      1.8575      6.87  |          | VQ     |         |         |
11+15      1.9044      6.80  |          | VQ     |         |         |
11+20      1.9512      6.80  |          | VQ     |         |         |
11+25      1.9980      6.80  |          |  Q     |         |         |
11+30      2.0450      6.82  |          |  Q     |         |         |
11+35      2.0912      6.72  |          |  Q     |         |         |
11+40      2.1348      6.33  |          | Q V    |         |         |
11+45      2.1767      6.09  |          | Q V    |         |         |
11+50      2.2184      6.06  |          | Q V    |         |         |
11+55      2.2612      6.21  |          | Q  V   |         |         |
12+ 0      2.3046      6.30  |          | Q  V   |         |         |
12+ 5      2.3507      6.69  |          |  Q V   |         |         |
12+10      2.4064      8.09  |          |    VQ  |         |         |
12+15      2.4681      8.96  |          |     VQ |         |         |
12+20      2.5326      9.35  |          |     V Q|         |         |
12+25      2.5998      9.77  |          |      V Q|        |         |
12+30      2.6689     10.03  |          |      V  Q       |         |
12+35      2.7398     10.29  |          |       V Q       |         |
12+40      2.8142     10.80  |          |       V |Q      |         |
12+45      2.8908     11.13  |          |        V| Q     |         |
12+50      2.9689     11.33  |          |        V| Q     |         |
12+55      3.0490     11.64  |          |         V  Q    |         |
13+ 0      3.1306     11.85  |          |         V  Q    |         |
13+ 5      3.2146     12.19  |          |          |V  Q  |         |
13+10      3.3058     13.24  |          |          |V    Q|         |
13+15      3.4015     13.90  |          |          | V    Q|        |
13+20      3.4991     14.17  |          |          |  V    Q|       |
13+25      3.5979     14.34  |          |          |  V    Q|       |
13+30      3.6976     14.47  |          |          |   V   Q|       |
13+35      3.7939     13.99  |          |          |    V Q |       |
```

```
13+40      3.8757     11.89  |          |          |  Q V    |          |
13+45      3.9488     10.61  |          |          |Q    V   |          |
13+50      4.0186     10.13  |          |          Q     V   |          |
13+55      4.0864      9.85  |          |         Q|      V  |          |
14+ 0      4.1530      9.67  |          |         Q|      V  |          |
14+ 5      4.2202      9.75  |          |         Q|       V |          |
14+10      4.2921     10.44  |          |          Q       V |          |
14+15      4.3669     10.86  |          |          |Q      V |          |
14+20      4.4423     10.95  |          |          |Q       V|          |
14+25      4.5170     10.84  |          |          |Q       V|          |
14+30      4.5911     10.76  |          |          |Q        V          |
14+35      4.6653     10.78  |          |          |Q        V          |
14+40      4.7397     10.80  |          |          |Q        |V         |
14+45      4.8142     10.82  |          |          |Q        |V         |
14+50      4.8885     10.79  |          |          |Q        | V        |
14+55      4.9616     10.61  |          |          |Q        | V        |
15+ 0      5.0340     10.51  |          |          |Q        |  V       |
15+ 5      5.1057     10.42  |          |          Q         |  V       |
15+10      5.1760     10.20  |          |          Q         |   V      |
15+15      5.2453     10.07  |          |          Q         |   V      |
15+20      5.3140      9.97  |          |         Q|         |    V     |
15+25      5.3811      9.75  |          |         Q|         |    V     |
15+30      5.4473      9.61  |          |         Q|         |     V    |
15+35      5.5117      9.35  |          |        Q |         |     V    |
15+40      5.5705      8.53  |          |      Q   |         |     V    |
15+45      5.6258      8.03  |          |     Q    |         |      V   |
15+50      5.6797      7.84  |          |   Q      |         |      V   |
15+55      5.7329      7.72  |          |   Q      |         |       V  |
16+ 0      5.7856      7.64  |          |   Q      |         |       V  |
16+ 5      5.8328      6.86  |          | Q        |         |       V  |
16+10      5.8603      3.99  |       Q  |          |         |       V  |
16+15      5.8757      2.22  |    Q     |          |         |        V|
16+20      5.8862      1.53  |  Q       |          |         |        V|
16+25      5.8939      1.11  | Q        |          |         |        V|
16+30      5.8995      0.82  |Q         |          |         |        V|
16+35      5.9039      0.63  |Q         |          |         |        V|
16+40      5.9071      0.47  Q          |          |         |        V|
16+45      5.9096      0.36  Q          |          |         |        V|
16+50      5.9115      0.28  Q          |          |         |        V|
16+55      5.9130      0.22  Q          |          |         |        V|
17+ 0      5.9141      0.16  Q          |          |         |        V|
17+ 5      5.9154      0.19  Q          |          |         |        V|
17+10      5.9178      0.34  Q          |          |         |        V|
17+15      5.9207      0.43  Q          |          |         |        V|
17+20      5.9240      0.47  Q          |          |         |        V|
17+25      5.9275      0.50  |Q         |          |         |        V|
17+30      5.9311      0.53  |Q         |          |         |        V|
17+35      5.9349      0.54  |Q         |          |         |        V|
17+40      5.9387      0.56  |Q         |          |         |        V|
17+45      5.9427      0.58  |Q         |          |         |        V|
17+50      5.9465      0.55  |Q         |          |         |        V|
17+55      5.9492      0.40  Q          |          |         |        V|
18+ 0      5.9513      0.31  Q          |          |         |        V|
18+ 5      5.9532      0.27  Q          |          |         |        V|
18+10      5.9549      0.25  Q          |          |         |        V|
18+15      5.9565      0.24  Q          |          |         |        V|
18+20      5.9581      0.23  Q          |          |         |        V|
18+25      5.9596      0.22  Q          |          |         |        V|
18+30      5.9611      0.21  Q          |          |         |        V|
18+35      5.9625      0.20  Q          |          |         |        V|
18+40      5.9637      0.18  Q          |          |         |        V|
18+45      5.9649      0.17  Q          |          |         |        V|
18+50      5.9659      0.16  Q          |          |         |        V|
18+55      5.9669      0.13  Q          |          |         |        V|
19+ 0      5.9677      0.12  Q          |          |         |        V|
19+ 5      5.9685      0.12  Q          |          |         |        V|
19+10      5.9694      0.13  Q          |          |         |        V|
19+15      5.9704      0.14  Q          |          |         |        V|
19+20      5.9715      0.16  Q          |          |         |        V|
19+25      5.9729      0.21  Q          |          |         |        V|
19+30      5.9746      0.24  Q          |          |         |        V|
19+35      5.9762      0.24  Q          |          |         |        V|
19+40      5.9776      0.20  Q          |          |         |        V|
```

```
  19+45       5.9788      0.17  Q          |          |          |          V|
  19+50       5.9799      0.16  Q          |          |          |          V|
  19+55       5.9809      0.14  Q          |          |          |          V|
  20+ 0       5.9817      0.12  Q          |          |          |          V|
  20+ 5       5.9826      0.12  Q          |          |          |          V|
  20+10       5.9835      0.14  Q          |          |          |          V|
  20+15       5.9845      0.15  Q          |          |          |          V|
  20+20       5.9855      0.15  Q          |          |          |          V|
  20+25       5.9866      0.15  Q          |          |          |          V|
  20+30       5.9876      0.15  Q          |          |          |          V|
  20+35       5.9886      0.15  Q          |          |          |          V|
  20+40       5.9896      0.15  Q          |          |          |          V|
  20+45       5.9907      0.15  Q          |          |          |          V|
  20+50       5.9917      0.15  Q          |          |          |          V|
  20+55       5.9926      0.13  Q          |          |          |          V|
  21+ 0       5.9934      0.12  Q          |          |          |          V|
  21+ 5       5.9941      0.12  Q          |          |          |          V|
  21+10       5.9951      0.13  Q          |          |          |          V|
  21+15       5.9960      0.14  Q          |          |          |          V|
  21+20       5.9970      0.14  Q          |          |          |          V|
  21+25       5.9979      0.12  Q          |          |          |          V|
  21+30       5.9986      0.11  Q          |          |          |          V|
  21+35       5.9994      0.11  Q          |          |          |          V|
  21+40       6.0003      0.13  Q          |          |          |          V|
  21+45       6.0013      0.14  Q          |          |          |          V|
  21+50       6.0022      0.14  Q          |          |          |          V|
  21+55       6.0031      0.12  Q          |          |          |          V|
  22+ 0       6.0039      0.11  Q          |          |          |          V|
  22+ 5       6.0046      0.11  Q          |          |          |          V|
  22+10       6.0055      0.13  Q          |          |          |          V|
  22+15       6.0065      0.14  Q          |          |          |          V|
  22+20       6.0075      0.14  Q          |          |          |          V|
  22+25       6.0083      0.12  Q          |          |          |          V|
  22+30       6.0091      0.11  Q          |          |          |          V|
  22+35       6.0098      0.11  Q          |          |          |          V|
  22+40       6.0106      0.11  Q          |          |          |          V|
  22+45       6.0113      0.10  Q          |          |          |          V|
  22+50       6.0120      0.10  Q          |          |          |          V|
  22+55       6.0127      0.10  Q          |          |          |          V|
  23+ 0       6.0134      0.10  Q          |          |          |          V|
  23+ 5       6.0141      0.10  Q          |          |          |          V|
  23+10       6.0148      0.10  Q          |          |          |          V|
  23+15       6.0155      0.10  Q          |          |          |          V|
  23+20       6.0162      0.10  Q          |          |          |          V|
  23+25       6.0169      0.10  Q          |          |          |          V|
  23+30       6.0176      0.10  Q          |          |          |          V|
  23+35       6.0183      0.10  Q          |          |          |          V|
  23+40       6.0190      0.10  Q          |          |          |          V|
  23+45       6.0197      0.10  Q          |          |          |          V|
  23+50       6.0204      0.10  Q          |          |          |          V|
  23+55       6.0211      0.10  Q          |          |          |          V|
  24+ 0       6.0218      0.10  Q          |          |          |          V|
  24+ 5       6.0224      0.09  Q          |          |          |          V|
  24+10       6.0228      0.05  Q          |          |          |          V|
  24+15       6.0230      0.03  Q          |          |          |          V|
  24+20       6.0231      0.02  Q          |          |          |          V|
  24+25       6.0232      0.01  Q          |          |          |          V|
  24+30       6.0232      0.01  Q          |          |          |          V|
  24+35       6.0233      0.01  Q          |          |          |          V|
  24+40       6.0233      0.00  Q          |          |          |          V|
  24+45       6.0233      0.00  Q          |          |          |          V|
  24+50       6.0233      0.00  Q          |          |          |          V|
  24+55       6.0233      0.00  Q          |          |          |           V
-------------------------------------------------------------------------
```

- **Area 'B' – 2 Year 1 Hour Developed Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: PRB00212.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 6407

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
DEVELOPED CONDITION UNIT HYDROGRAPH - 2 YEAR 1 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
Drainage Area =      13.82(Ac.)  =      0.022 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      13.82(Ac.)  =      0.022 Sq. Mi.
Length along longest watercourse =    1877.00(Ft.)
Length along longest watercourse measured to centroid =     480.00(Ft.)
Length along longest watercourse =      0.355 Mi.
Length along longest watercourse measured to centroid =      0.091 Mi.
Difference in elevation =      36.50(Ft.)
Slope along watercourse =    102.6745 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time =    0.041 Hr.
Lag time =     2.43 Min.
25% of lag time =     0.61 Min.
40% of lag time =     0.97 Min.
Unit time =     5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           0.55                 7.60

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           1.45                20.04

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    0.550(In)
Area Averaged 100-Year Rainfall =    1.450(In)

Point rain (area averaged) =    0.550(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    0.550(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    13.820           40.80          0.800
 Total Area Entered =     13.82(Ac.)
```

```
      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
      40.8  22.6      0.819     0.800        0.229       1.000      0.229
                                                       Sum (F) =   0.229
      Area averaged mean soil loss (F) (In/Hr) =  0.229
      Minimum soil loss rate ((In/Hr)) =  0.115
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.260
      ------------------------------------------------------------------------
      Slope of intensity-duration curve for a 1 hour storm =0.4800
      ------------------------------------------------------------------------

                  U n i t  H y d r o g r a p h
                         VALLEY S-Curve
      ------------------------------------------------------------------------
                  Unit Hydrograph Data
      ------------------------------------------------------------------------
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
          (hrs)                          Graph %           (CFS)
      ------------------------------------------------------------------------
          1   0.083        205.640         44.359             6.178
          2   0.167        411.280         42.976             5.986
          3   0.250        616.920          8.568             1.193
          4   0.333        822.560          4.097             0.571
                                   Sum = 100.000   Sum=      13.928
-------------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1	0.08	4.40	0.290	(0.229)		0.075	0.215
2	0.17	4.50	0.297	(0.229)		0.077	0.220
3	0.25	5.40	0.356	(0.229)		0.093	0.264
4	0.33	5.40	0.356	(0.229)		0.093	0.264
5	0.42	5.70	0.376	(0.229)		0.098	0.278
6	0.50	6.40	0.422	(0.229)		0.110	0.313
7	0.58	7.90	0.521	(0.229)		0.136	0.386
8	0.67	9.10	0.601	(0.229)		0.156	0.444
9	0.75	12.80	0.845	(0.229)		0.220	0.625
10	0.83	25.60	1.689	0.229	(	0.439)	1.460
11	0.92	7.90	0.521	(0.229)		0.136	0.386
12	1.00	4.90	0.323	(0.229)		0.084	0.239
		(Loss Rate Not Used)					
Sum =		100.0				Sum =	5.1

```
      Flood volume = Effective rainfall      0.42(In)
       times area      13.8(Ac.)/[(In)/(Ft.)] =       0.5(Ac.Ft)
      Total soil loss =      0.13(In)
      Total soil loss =     0.145(Ac.Ft)
      Total rainfall =      0.55(In)
      Flood volume =       21293.0 Cubic Feet
      Total soil loss =        6295.2 Cubic Feet
      ------------------------------------------------------------------------
       Peak flow rate of this hydrograph =     13.520(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          1 - H O U R    S T O R M
                     R u n o f f     H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
 ----------------------------------------------------------------------------
   0+ 5       0.0091      1.33  V Q       |         |         |         |
   0+10       0.0274      2.65  | V  Q    |         |         |         |
   0+15       0.0494      3.20  |   V Q   |         |         |         |
   0+20       0.0742      3.59  |     VQ  |         |         |         |
   0+25       0.0999      3.74  |      QV |         |         |         |
   0+30       0.1279      4.06  |       Q V         |         |         |
   0+35       0.1606      4.74  |        Q|  V      |         |         |
```

```
   0+40       0.1991      5.59  |          |Q    V   |          |          |
   0+45       0.2484      7.16  |          |   Q     V          |          |
   0+50       0.3415     13.52  |          |          |      Q   |          |
   0+55       0.4250     12.13  |          |          |   Q      |   V      |
   1+ 0       0.4656      5.89  |          |Q         |          |       V  |
   1+ 5       0.4844      2.73  |    Q     |          |          |        V |
   1+10       0.4879      0.51  |Q         |          |          |        V |
   1+15       0.4888      0.14  Q          |          |          |         V
-------------------------------------------------------------------------
```

- **Area 'B' – 2 Year 3 Hour Developed Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: PRB00232.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 6407

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
DEVELOPED CONDITION UNIT HYDROGRAPH - 2 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
Drainage Area =      13.82(Ac.)  =      0.022 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      13.82(Ac.)  =      0.022 Sq. Mi.
Length along longest watercourse =    1877.00(Ft.)
Length along longest watercourse measured to centroid =     480.00(Ft.)
Length along longest watercourse =      0.355 Mi.
Length along longest watercourse measured to centroid =      0.091 Mi.
Difference in elevation =      36.50(Ft.)
Slope along watercourse =    102.6745 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time =    0.041 Hr.
Lag time =     2.43 Min.
25% of lag time =     0.61 Min.
40% of lag time =     0.97 Min.
Unit time =     5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           1.00                 13.82

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           2.50                 34.55

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    1.000(In)
Area Averaged 100-Year Rainfall =    2.500(In)

Point rain (area averaged) =    1.000(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    1.000(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    13.820           40.80          0.800
 Total Area Entered =     13.82(Ac.)
```

```
      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
      40.8  22.6      0.819     0.800        0.229       1.000      0.229
                                                        Sum (F) =   0.229
      Area averaged mean soil loss (F) (In/Hr) =  0.229
      Minimum soil loss rate ((In/Hr)) =  0.115
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.260
      ------------------------------------------------------------------------

                  U n i t  H y d r o g r a p h
                         VALLEY S-Curve
      ------------------------------------------------------------------------
                  Unit Hydrograph Data
      ------------------------------------------------------------------------
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
          (hrs)                          Graph %           (CFS)
      ------------------------------------------------------------------------
          1   0.083        205.640         44.359             6.178
          2   0.167        411.280         42.976             5.986
          3   0.250        616.920          8.568             1.193
          4   0.333        822.560          4.097             0.571
                                  Sum = 100.000   Sum=      13.928
-------------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Pattern	Storm Rain	Loss rate(In./Hr)		Effective
(Hr.)	Percent	(In/Hr)	Max	Low	(In/Hr)
1 0.08	1.30	0.156	(0.229)	0.041	0.115
2 0.17	1.30	0.156	(0.229)	0.041	0.115
3 0.25	1.10	0.132	(0.229)	0.034	0.098
4 0.33	1.50	0.180	(0.229)	0.047	0.133
5 0.42	1.50	0.180	(0.229)	0.047	0.133
6 0.50	1.80	0.216	(0.229)	0.056	0.160
7 0.58	1.50	0.180	(0.229)	0.047	0.133
8 0.67	1.80	0.216	(0.229)	0.056	0.160
9 0.75	1.80	0.216	(0.229)	0.056	0.160
10 0.83	1.50	0.180	(0.229)	0.047	0.133
11 0.92	1.60	0.192	(0.229)	0.050	0.142
12 1.00	1.80	0.216	(0.229)	0.056	0.160
13 1.08	2.20	0.264	(0.229)	0.069	0.195
14 1.17	2.20	0.264	(0.229)	0.069	0.195
15 1.25	2.20	0.264	(0.229)	0.069	0.195
16 1.33	2.00	0.240	(0.229)	0.062	0.178
17 1.42	2.60	0.312	(0.229)	0.081	0.231
18 1.50	2.70	0.324	(0.229)	0.084	0.240
19 1.58	2.40	0.288	(0.229)	0.075	0.213
20 1.67	2.70	0.324	(0.229)	0.084	0.240
21 1.75	3.30	0.396	(0.229)	0.103	0.293
22 1.83	3.10	0.372	(0.229)	0.097	0.275
23 1.92	2.90	0.348	(0.229)	0.090	0.258
24 2.00	3.00	0.360	(0.229)	0.094	0.266
25 2.08	3.10	0.372	(0.229)	0.097	0.275
26 2.17	4.20	0.504	(0.229)	0.131	0.373
27 2.25	5.00	0.600	(0.229)	0.156	0.444
28 2.33	3.50	0.420	(0.229)	0.109	0.311
29 2.42	6.80	0.816	(0.229)	0.212	0.604
30 2.50	7.30	0.876	(0.229)	0.228	0.648
31 2.58	8.20	0.984	0.229	(0.256)	0.755
32 2.67	5.90	0.708	(0.229)	0.184	0.524
33 2.75	2.00	0.240	(0.229)	0.062	0.178
34 2.83	1.80	0.216	(0.229)	0.056	0.160
35 2.92	1.80	0.216	(0.229)	0.056	0.160
36 3.00	0.60	0.072	(0.229)	0.019	0.053
	(Loss Rate Not Used)				
Sum =	100.0			Sum =	8.9

```
   Flood volume = Effective rainfall      0.74(In)
    times area      13.8(Ac.)/[(In)/(Ft.)] =       0.9(Ac.Ft)
   Total soil loss =      0.26(In)
```

```
      Total soil loss =     0.297(Ac.Ft)
      Total rainfall =      1.00(In)
      Flood volume =       37232.0 Cubic Feet
      Total soil loss =       12931.6 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      9.445(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          3 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ---------------------------------------------------------------------------
   0+ 5       0.0049      0.71  V Q       |         |         |         |
   0+10       0.0146      1.40  V    Q    |         |         |         |
   0+15       0.0245      1.43  |V   Q    |         |         |         |
   0+20       0.0356      1.61  |V    Q   |         |         |         |
   0+25       0.0480      1.80  | V    Q  |         |         |         |
   0+30       0.0618      2.00  | V     Q |         |         |         |
   0+35       0.0756      2.02  |  V    Q |         |         |         |
   0+40       0.0898      2.05  |   V   Q |         |         |         |
   0+45       0.1049      2.20  |   V   Q |         |         |         |
   0+50       0.1190      2.05  |    V  Q |         |         |         |
   0+55       0.1325      1.96  |     VQ  |         |         |         |
   1+ 0       0.1469      2.09  |     V Q |         |         |         |
   1+ 5       0.1635      2.41  |      V Q|         |         |         |
   1+10       0.1817      2.65  |       V Q         |         |         |
   1+15       0.2003      2.70  |        VQ         |         |         |
   1+20       0.2183      2.61  |         Q         |         |         |
   1+25       0.2378      2.84  |         |Q        |         |         |
   1+30       0.2598      3.19  |         | Q       |         |         |
   1+35       0.2814      3.13  |         | QV      |         |         |
   1+40       0.3032      3.18  |         | Q V     |         |         |
   1+45       0.3283      3.64  |         |   QV    |         |         |
   1+50       0.3549      3.86  |         |    QV   |         |         |
   1+55       0.3806      3.73  |         |   Q  V  |         |         |
   2+ 0       0.4059      3.68  |         |   Q   V |         |         |
   2+ 5       0.4319      3.76  |         |    Q    V         |         |
   2+10       0.4623      4.42  |         |      Q  |V        |         |
   2+15       0.4999      5.46  |         |         |Q V      |         |
   2+20       0.5356      5.18  |         |         Q    V    |         |
   2+25       0.5792      6.34  |         |         |    Q V  |         |
   2+30       0.6360      8.25  |         |         |        V| Q       |
   2+35       0.7011      9.45  |         |         |         | V    Q  |
   2+40       0.7622      8.88  |         |         |         |    Q    |
   2+45       0.8001      5.51  |         |         | Q       |      V  |
   2+50       0.8215      3.11  |         | Q       |         |       V |
   2+55       0.8384      2.46  |        Q|         |         |        V|
   3+ 0       0.8493      1.58  |     Q   |         |         |        V|
   3+ 5       0.8535      0.60  | Q       |         |         |        V|
   3+10       0.8545      0.15  Q         |         |         |        V|
   3+15       0.8547      0.03  Q         |         |         |         V
---------------------------------------------------------------------------
```

- **Area 'B' – 2 Year 6 Hour Developed Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: PRB00262.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 6407

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
DEVELOPED CONDITION UNIT HYDROGRAPH - 2 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
Drainage Area =      13.82(Ac.)  =      0.022 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      13.82(Ac.)  =      0.022 Sq. Mi.
Length along longest watercourse =    1877.00(Ft.)
Length along longest watercourse measured to centroid =     480.00(Ft.)
Length along longest watercourse =      0.355 Mi.
Length along longest watercourse measured to centroid =      0.091 Mi.
Difference in elevation =      36.50(Ft.)
Slope along watercourse =    102.6745 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time =    0.041 Hr.
Lag time =     2.43 Min.
25% of lag time =     0.61 Min.
40% of lag time =     0.97 Min.
Unit time =     5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           1.40                 19.35

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           3.00                 41.46

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    1.400(In)
Area Averaged 100-Year Rainfall =    3.000(In)

Point rain (area averaged) =    1.400(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    1.400(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    13.820           40.80          0.800
 Total Area Entered =     13.82(Ac.)
```

```
      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
      40.8  22.6      0.819     0.800        0.229       1.000      0.229
                                                       Sum (F) =    0.229
      Area averaged mean soil loss (F) (In/Hr) =  0.229
      Minimum soil loss rate ((In/Hr)) =  0.115
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.260
      ------------------------------------------------------------------------

                  U n i t  H y d r o g r a p h
                         VALLEY S-Curve
      ------------------------------------------------------------------------
                  Unit Hydrograph Data
      ------------------------------------------------------------------------
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
          (hrs)                          Graph %           (CFS)
      ------------------------------------------------------------------------
          1   0.083        205.640         44.359             6.178
          2   0.167        411.280         42.976             5.986
          3   0.250        616.920          8.568             1.193
          4   0.333        822.560          4.097             0.571
                                  Sum = 100.000   Sum=      13.928
-------------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.084	(0.229)	0.022	0.062
2	0.17	0.60	0.101	(0.229)	0.026	0.075
3	0.25	0.60	0.101	(0.229)	0.026	0.075
4	0.33	0.60	0.101	(0.229)	0.026	0.075
5	0.42	0.60	0.101	(0.229)	0.026	0.075
6	0.50	0.70	0.118	(0.229)	0.031	0.087
7	0.58	0.70	0.118	(0.229)	0.031	0.087
8	0.67	0.70	0.118	(0.229)	0.031	0.087
9	0.75	0.70	0.118	(0.229)	0.031	0.087
10	0.83	0.70	0.118	(0.229)	0.031	0.087
11	0.92	0.70	0.118	(0.229)	0.031	0.087
12	1.00	0.80	0.134	(0.229)	0.035	0.099
13	1.08	0.80	0.134	(0.229)	0.035	0.099
14	1.17	0.80	0.134	(0.229)	0.035	0.099
15	1.25	0.80	0.134	(0.229)	0.035	0.099
16	1.33	0.80	0.134	(0.229)	0.035	0.099
17	1.42	0.80	0.134	(0.229)	0.035	0.099
18	1.50	0.80	0.134	(0.229)	0.035	0.099
19	1.58	0.80	0.134	(0.229)	0.035	0.099
20	1.67	0.80	0.134	(0.229)	0.035	0.099
21	1.75	0.80	0.134	(0.229)	0.035	0.099
22	1.83	0.80	0.134	(0.229)	0.035	0.099
23	1.92	0.80	0.134	(0.229)	0.035	0.099
24	2.00	0.90	0.151	(0.229)	0.039	0.112
25	2.08	0.80	0.134	(0.229)	0.035	0.099
26	2.17	0.90	0.151	(0.229)	0.039	0.112
27	2.25	0.90	0.151	(0.229)	0.039	0.112
28	2.33	0.90	0.151	(0.229)	0.039	0.112
29	2.42	0.90	0.151	(0.229)	0.039	0.112
30	2.50	0.90	0.151	(0.229)	0.039	0.112
31	2.58	0.90	0.151	(0.229)	0.039	0.112
32	2.67	0.90	0.151	(0.229)	0.039	0.112
33	2.75	1.00	0.168	(0.229)	0.044	0.124
34	2.83	1.00	0.168	(0.229)	0.044	0.124
35	2.92	1.00	0.168	(0.229)	0.044	0.124
36	3.00	1.00	0.168	(0.229)	0.044	0.124
37	3.08	1.00	0.168	(0.229)	0.044	0.124
38	3.17	1.10	0.185	(0.229)	0.048	0.137
39	3.25	1.10	0.185	(0.229)	0.048	0.137
40	3.33	1.10	0.185	(0.229)	0.048	0.137
41	3.42	1.20	0.202	(0.229)	0.052	0.149
42	3.50	1.30	0.218	(0.229)	0.057	0.162

```
 43   3.58     1.40      0.235       (  0.229)       0.061        0.174
 44   3.67     1.40      0.235       (  0.229)       0.061        0.174
 45   3.75     1.50      0.252       (  0.229)       0.066        0.186
 46   3.83     1.50      0.252       (  0.229)       0.066        0.186
 47   3.92     1.60      0.269       (  0.229)       0.070        0.199
 48   4.00     1.60      0.269       (  0.229)       0.070        0.199
 49   4.08     1.70      0.286       (  0.229)       0.074        0.211
 50   4.17     1.80      0.302       (  0.229)       0.079        0.224
 51   4.25     1.90      0.319       (  0.229)       0.083        0.236
 52   4.33     2.00      0.336       (  0.229)       0.087        0.249
 53   4.42     2.10      0.353       (  0.229)       0.092        0.261
 54   4.50     2.10      0.353       (  0.229)       0.092        0.261
 55   4.58     2.20      0.370       (  0.229)       0.096        0.273
 56   4.67     2.30      0.386       (  0.229)       0.100        0.286
 57   4.75     2.40      0.403       (  0.229)       0.105        0.298
 58   4.83     2.40      0.403       (  0.229)       0.105        0.298
 59   4.92     2.50      0.420       (  0.229)       0.109        0.311
 60   5.00     2.60      0.437       (  0.229)       0.114        0.323
 61   5.08     3.10      0.521       (  0.229)       0.135        0.385
 62   5.17     3.60      0.605       (  0.229)       0.157        0.448
 63   5.25     3.90      0.655       (  0.229)       0.170        0.485
 64   5.33     4.20      0.706       (  0.229)       0.183        0.522
 65   5.42     4.70      0.790       (  0.229)       0.205        0.584
 66   5.50     5.60      0.941          0.229    (  0.245)       0.711
 67   5.58     1.90      0.319       (  0.229)       0.083        0.236
 68   5.67     0.90      0.151       (  0.229)       0.039        0.112
 69   5.75     0.60      0.101       (  0.229)       0.026        0.075
 70   5.83     0.50      0.084       (  0.229)       0.022        0.062
 71   5.92     0.30      0.050       (  0.229)       0.013        0.037
 72   6.00     0.20      0.034       (  0.229)       0.009        0.025
             (Loss Rate Not Used)
   Sum =     100.0                                    Sum =    12.4
     Flood volume = Effective rainfall      1.04(In)
      times area      13.8(Ac.)/[(In)/(Ft.)] =       1.2(Ac.Ft)
     Total soil loss =      0.36(In)
     Total soil loss =     0.418(Ac.Ft)
     Total rainfall =      1.40(In)
     Flood volume =       52034.1 Cubic Feet
     Total soil loss =       18195.8 Cubic Feet
     ---------------------------------------------------------------------
      Peak flow rate of this hydrograph =      8.797(CFS)
     ---------------------------------------------------------------------
     +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          6 - H O U R    S T O R M
                      R u n o f f      H y d r o g r a p h
     ---------------------------------------------------------------------
                   Hydrograph in   5   Minute intervals ((CFS))

     ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
-------------------------------------------------------------------------
  0+ 5       0.0026      0.38  VQ        |         |         |         |
  0+10       0.0084      0.83  V  Q      |         |         |         |
  0+15       0.0151      0.98  V  Q      |         |         |         |
  0+20       0.0223      1.03  V   Q     |         |         |         |
  0+25       0.0294      1.04  V   Q     |         |         |         |
  0+30       0.0371      1.12  |V  Q     |         |         |         |
  0+35       0.0453      1.19  |V  Q     |         |         |         |
  0+40       0.0536      1.21  |V  Q     |         |         |         |
  0+45       0.0620      1.21  | V Q     |         |         |         |
  0+50       0.0703      1.21  | V Q     |         |         |         |
  0+55       0.0787      1.21  | V Q     |         |         |         |
  1+ 0       0.0875      1.29  | V  Q    |         |         |         |
  1+ 5       0.0969      1.36  |  V Q    |         |         |         |
  1+10       0.1064      1.38  |  V Q    |         |         |         |
  1+15       0.1160      1.39  |  V Q    |         |         |         |
  1+20       0.1255      1.39  |   VQ    |         |         |         |
  1+25       0.1351      1.39  |   VQ    |         |         |         |
  1+30       0.1446      1.39  |   VQ    |         |         |         |
  1+35       0.1542      1.39  |    Q    |         |         |         |
  1+40       0.1637      1.39  |    Q    |         |         |         |
  1+45       0.1732      1.39  |    Q    |         |         |         |
  1+50       0.1828      1.39  |    QV   |         |         |         |
```

```
   1+55       0.1923      1.39  |    QV   |         |         |         |
   2+ 0       0.2024      1.46  |    QV   |         |         |         |
   2+ 5       0.2125      1.46  |    Q V  |         |         |         |
   2+10       0.2226      1.48  |    Q V  |         |         |         |
   2+15       0.2333      1.54  |     QV  |         |         |         |
   2+20       0.2440      1.55  |     Q V |         |         |         |
   2+25       0.2547      1.56  |     Q V |         |         |         |
   2+30       0.2654      1.56  |     Q V |         |         |         |
   2+35       0.2762      1.56  |     Q  V|         |         |         |
   2+40       0.2869      1.56  |     Q  V|         |         |         |
   2+45       0.2982      1.64  |     Q  V|         |         |         |
   2+50       0.3100      1.71  |     Q   V         |         |         |
   2+55       0.3218      1.73  |     Q   V         |         |         |
   3+ 0       0.3338      1.73  |     Q   |V        |         |         |
   3+ 5       0.3457      1.73  |     Q   |V        |         |         |
   3+10       0.3582      1.81  |      Q  |V        |         |         |
   3+15       0.3711      1.88  |      Q  | V       |         |         |
   3+20       0.3842      1.90  |      Q  | V       |         |         |
   3+25       0.3979      1.98  |      Q  |  V      |         |         |
   3+30       0.4126      2.13  |       Q |  V      |         |         |
   3+35       0.4284      2.30  |         Q|   V     |         |         |
   3+40       0.4449      2.40  |         Q|   V     |         |         |
   3+45       0.4621      2.50  |         Q|    V    |         |         |
   3+50       0.4798      2.58  |          Q     V   |         |         |
   3+55       0.4982      2.67  |          Q     V   |         |         |
   4+ 0       0.5171      2.75  |          Q      V  |         |         |
   4+ 5       0.5367      2.84  |          |Q     V  |         |         |
   4+10       0.5574      3.00  |          |Q      V |         |         |
   4+15       0.5792      3.17  |          | Q      V|         |         |
   4+20       0.6022      3.34  |          |  Q      V         |         |
   4+25       0.6264      3.51  |          |   Q     V         |         |
   4+30       0.6512      3.61  |          |   Q     |V        |         |
   4+35       0.6768      3.71  |          |   Q     | V       |         |
   4+40       0.7034      3.87  |          |    Q    |  V      |         |
   4+45       0.7312      4.03  |          |     Q   |   V     |         |
   4+50       0.7596      4.13  |          |     Q   |    V    |         |
   4+55       0.7887      4.23  |          |     Q   |     V   |         |
   5+ 0       0.8189      4.39  |          |      Q  |      V  |         |
   5+ 5       0.8524      4.86  |          |        Q|       V |         |
   5+10       0.8912      5.64  |          |         | Q       V|         |
   5+15       0.9347      6.32  |          |         |    Q     |V        |
   5+20       0.9822      6.89  |          |         |      Q   | V       |
   5+25       1.0343      7.57  |          |         |         Q   V      |
   5+30       1.0949      8.80  |          |         |          |    QV   |
   5+35       1.1412      6.72  |          |         |     Q    |       V |
   5+40       1.1638      3.29  |          |  Q      |          |       V |
   5+45       1.1763      1.82  |       Q  |         |          |        V|
   5+50       1.1839      1.10  |    Q     |         |          |        V|
   5+55       1.1891      0.76  |   Q      |         |          |        V|
   6+ 0       1.1925      0.49  |Q         |         |          |        V|
   6+ 5       1.1941      0.23  Q          |         |          |        V|
   6+10       1.1944      0.05  Q          |         |          |        V|
   6+15       1.1945      0.01  Q          |         |          |         V
-------------------------------------------------------------------------
```

- **Area 'B' – 2 Year 24 Hour Developed Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: PRB002242.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 6407

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
DEVELOPED CONDITION UNIT HYDROGRAPH - 2 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
Drainage Area =      13.82(Ac.)  =      0.022 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      13.82(Ac.)  =      0.022 Sq. Mi.
Length along longest watercourse =    1877.00(Ft.)
Length along longest watercourse measured to centroid =     480.00(Ft.)
Length along longest watercourse =      0.355 Mi.
Length along longest watercourse measured to centroid =      0.091 Mi.
Difference in elevation =      36.50(Ft.)
Slope along watercourse =    102.6745 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time =    0.041 Hr.
Lag time =     2.43 Min.
25% of lag time =     0.61 Min.
40% of lag time =     0.97 Min.
Unit time =     5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           2.50                 34.55

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           8.00                110.56

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    2.500(In)
Area Averaged 100-Year Rainfall =    8.000(In)

Point rain (area averaged) =    2.500(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    2.500(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    13.820           40.80          0.800
 Total Area Entered =     13.82(Ac.)
```

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
40.8	22.6	0.819	0.800	0.229	1.000	0.229
					Sum (F) =	0.229

Area averaged mean soil loss (F) (In/Hr) = 0.229
Minimum soil loss rate ((In/Hr)) = 0.115
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.260

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	205.640	44.359	6.178
2	0.167	411.280	42.976	5.986
3	0.250	616.920	8.568	1.193
4	0.333	822.560	4.097	0.571
			Sum = 100.000	Sum= 13.928

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	(Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1	0.08	0.07	0.020	(0.406)		0.005	0.015
2	0.17	0.07	0.020	(0.405)		0.005	0.015
3	0.25	0.07	0.020	(0.403)		0.005	0.015
4	0.33	0.10	0.030	(0.402)		0.008	0.022
5	0.42	0.10	0.030	(0.400)		0.008	0.022
6	0.50	0.10	0.030	(0.399)		0.008	0.022
7	0.58	0.10	0.030	(0.397)		0.008	0.022
8	0.67	0.10	0.030	(0.396)		0.008	0.022
9	0.75	0.10	0.030	(0.394)		0.008	0.022
10	0.83	0.13	0.040	(0.392)		0.010	0.030
11	0.92	0.13	0.040	(0.391)		0.010	0.030
12	1.00	0.13	0.040	(0.389)		0.010	0.030
13	1.08	0.10	0.030	(0.388)		0.008	0.022
14	1.17	0.10	0.030	(0.386)		0.008	0.022
15	1.25	0.10	0.030	(0.385)		0.008	0.022
16	1.33	0.10	0.030	(0.383)		0.008	0.022
17	1.42	0.10	0.030	(0.382)		0.008	0.022
18	1.50	0.10	0.030	(0.380)		0.008	0.022
19	1.58	0.10	0.030	(0.379)		0.008	0.022
20	1.67	0.10	0.030	(0.377)		0.008	0.022
21	1.75	0.10	0.030	(0.376)		0.008	0.022
22	1.83	0.13	0.040	(0.374)		0.010	0.030
23	1.92	0.13	0.040	(0.373)		0.010	0.030
24	2.00	0.13	0.040	(0.371)		0.010	0.030
25	2.08	0.13	0.040	(0.370)		0.010	0.030
26	2.17	0.13	0.040	(0.368)		0.010	0.030
27	2.25	0.13	0.040	(0.367)		0.010	0.030
28	2.33	0.13	0.040	(0.365)		0.010	0.030
29	2.42	0.13	0.040	(0.364)		0.010	0.030
30	2.50	0.13	0.040	(0.362)		0.010	0.030
31	2.58	0.17	0.050	(0.361)		0.013	0.037
32	2.67	0.17	0.050	(0.359)		0.013	0.037
33	2.75	0.17	0.050	(0.358)		0.013	0.037
34	2.83	0.17	0.050	(0.356)		0.013	0.037
35	2.92	0.17	0.050	(0.355)		0.013	0.037
36	3.00	0.17	0.050	(0.353)		0.013	0.037
37	3.08	0.17	0.050	(0.352)		0.013	0.037
38	3.17	0.17	0.050	(0.350)		0.013	0.037
39	3.25	0.17	0.050	(0.349)		0.013	0.037
40	3.33	0.17	0.050	(0.347)		0.013	0.037
41	3.42	0.17	0.050	(0.346)		0.013	0.037
42	3.50	0.17	0.050	(0.345)		0.013	0.037

43	3.58	0.17	0.050	(0.343)	0.013	0.037
44	3.67	0.17	0.050	(0.342)	0.013	0.037
45	3.75	0.17	0.050	(0.340)	0.013	0.037
46	3.83	0.20	0.060	(0.339)	0.016	0.044
47	3.92	0.20	0.060	(0.337)	0.016	0.044
48	4.00	0.20	0.060	(0.336)	0.016	0.044
49	4.08	0.20	0.060	(0.335)	0.016	0.044
50	4.17	0.20	0.060	(0.333)	0.016	0.044
51	4.25	0.20	0.060	(0.332)	0.016	0.044
52	4.33	0.23	0.070	(0.330)	0.018	0.052
53	4.42	0.23	0.070	(0.329)	0.018	0.052
54	4.50	0.23	0.070	(0.327)	0.018	0.052
55	4.58	0.23	0.070	(0.326)	0.018	0.052
56	4.67	0.23	0.070	(0.325)	0.018	0.052
57	4.75	0.23	0.070	(0.323)	0.018	0.052
58	4.83	0.27	0.080	(0.322)	0.021	0.059
59	4.92	0.27	0.080	(0.320)	0.021	0.059
60	5.00	0.27	0.080	(0.319)	0.021	0.059
61	5.08	0.20	0.060	(0.318)	0.016	0.044
62	5.17	0.20	0.060	(0.316)	0.016	0.044
63	5.25	0.20	0.060	(0.315)	0.016	0.044
64	5.33	0.23	0.070	(0.314)	0.018	0.052
65	5.42	0.23	0.070	(0.312)	0.018	0.052
66	5.50	0.23	0.070	(0.311)	0.018	0.052
67	5.58	0.27	0.080	(0.309)	0.021	0.059
68	5.67	0.27	0.080	(0.308)	0.021	0.059
69	5.75	0.27	0.080	(0.307)	0.021	0.059
70	5.83	0.27	0.080	(0.305)	0.021	0.059
71	5.92	0.27	0.080	(0.304)	0.021	0.059
72	6.00	0.27	0.080	(0.303)	0.021	0.059
73	6.08	0.30	0.090	(0.301)	0.023	0.067
74	6.17	0.30	0.090	(0.300)	0.023	0.067
75	6.25	0.30	0.090	(0.299)	0.023	0.067
76	6.33	0.30	0.090	(0.297)	0.023	0.067
77	6.42	0.30	0.090	(0.296)	0.023	0.067
78	6.50	0.30	0.090	(0.295)	0.023	0.067
79	6.58	0.33	0.100	(0.293)	0.026	0.074
80	6.67	0.33	0.100	(0.292)	0.026	0.074
81	6.75	0.33	0.100	(0.291)	0.026	0.074
82	6.83	0.33	0.100	(0.289)	0.026	0.074
83	6.92	0.33	0.100	(0.288)	0.026	0.074
84	7.00	0.33	0.100	(0.287)	0.026	0.074
85	7.08	0.33	0.100	(0.285)	0.026	0.074
86	7.17	0.33	0.100	(0.284)	0.026	0.074
87	7.25	0.33	0.100	(0.283)	0.026	0.074
88	7.33	0.37	0.110	(0.282)	0.029	0.081
89	7.42	0.37	0.110	(0.280)	0.029	0.081
90	7.50	0.37	0.110	(0.279)	0.029	0.081
91	7.58	0.40	0.120	(0.278)	0.031	0.089
92	7.67	0.40	0.120	(0.276)	0.031	0.089
93	7.75	0.40	0.120	(0.275)	0.031	0.089
94	7.83	0.43	0.130	(0.274)	0.034	0.096
95	7.92	0.43	0.130	(0.273)	0.034	0.096
96	8.00	0.43	0.130	(0.271)	0.034	0.096
97	8.08	0.50	0.150	(0.270)	0.039	0.111
98	8.17	0.50	0.150	(0.269)	0.039	0.111
99	8.25	0.50	0.150	(0.268)	0.039	0.111
100	8.33	0.50	0.150	(0.266)	0.039	0.111
101	8.42	0.50	0.150	(0.265)	0.039	0.111
102	8.50	0.50	0.150	(0.264)	0.039	0.111
103	8.58	0.53	0.160	(0.263)	0.042	0.118
104	8.67	0.53	0.160	(0.261)	0.042	0.118
105	8.75	0.53	0.160	(0.260)	0.042	0.118
106	8.83	0.57	0.170	(0.259)	0.044	0.126
107	8.92	0.57	0.170	(0.258)	0.044	0.126
108	9.00	0.57	0.170	(0.256)	0.044	0.126
109	9.08	0.63	0.190	(0.255)	0.049	0.141
110	9.17	0.63	0.190	(0.254)	0.049	0.141
111	9.25	0.63	0.190	(0.253)	0.049	0.141
112	9.33	0.67	0.200	(0.252)	0.052	0.148
113	9.42	0.67	0.200	(0.250)	0.052	0.148
114	9.50	0.67	0.200	(0.249)	0.052	0.148
115	9.58	0.70	0.210	(0.248)	0.055	0.155

116	9.67	0.70	0.210	(0.247)	0.055	0.155
117	9.75	0.70	0.210	(0.246)	0.055	0.155
118	9.83	0.73	0.220	(0.244)	0.057	0.163
119	9.92	0.73	0.220	(0.243)	0.057	0.163
120	10.00	0.73	0.220	(0.242)	0.057	0.163
121	10.08	0.50	0.150	(0.241)	0.039	0.111
122	10.17	0.50	0.150	(0.240)	0.039	0.111
123	10.25	0.50	0.150	(0.239)	0.039	0.111
124	10.33	0.50	0.150	(0.237)	0.039	0.111
125	10.42	0.50	0.150	(0.236)	0.039	0.111
126	10.50	0.50	0.150	(0.235)	0.039	0.111
127	10.58	0.67	0.200	(0.234)	0.052	0.148
128	10.67	0.67	0.200	(0.233)	0.052	0.148
129	10.75	0.67	0.200	(0.232)	0.052	0.148
130	10.83	0.67	0.200	(0.231)	0.052	0.148
131	10.92	0.67	0.200	(0.229)	0.052	0.148
132	11.00	0.67	0.200	(0.228)	0.052	0.148
133	11.08	0.63	0.190	(0.227)	0.049	0.141
134	11.17	0.63	0.190	(0.226)	0.049	0.141
135	11.25	0.63	0.190	(0.225)	0.049	0.141
136	11.33	0.63	0.190	(0.224)	0.049	0.141
137	11.42	0.63	0.190	(0.223)	0.049	0.141
138	11.50	0.63	0.190	(0.222)	0.049	0.141
139	11.58	0.57	0.170	(0.221)	0.044	0.126
140	11.67	0.57	0.170	(0.219)	0.044	0.126
141	11.75	0.57	0.170	(0.218)	0.044	0.126
142	11.83	0.60	0.180	(0.217)	0.047	0.133
143	11.92	0.60	0.180	(0.216)	0.047	0.133
144	12.00	0.60	0.180	(0.215)	0.047	0.133
145	12.08	0.83	0.250	(0.214)	0.065	0.185
146	12.17	0.83	0.250	(0.213)	0.065	0.185
147	12.25	0.83	0.250	(0.212)	0.065	0.185
148	12.33	0.87	0.260	(0.211)	0.068	0.192
149	12.42	0.87	0.260	(0.210)	0.068	0.192
150	12.50	0.87	0.260	(0.209)	0.068	0.192
151	12.58	0.93	0.280	(0.208)	0.073	0.207
152	12.67	0.93	0.280	(0.207)	0.073	0.207
153	12.75	0.93	0.280	(0.206)	0.073	0.207
154	12.83	0.97	0.290	(0.205)	0.075	0.215
155	12.92	0.97	0.290	(0.204)	0.075	0.215
156	13.00	0.97	0.290	(0.202)	0.075	0.215
157	13.08	1.13	0.340	(0.201)	0.088	0.252
158	13.17	1.13	0.340	(0.200)	0.088	0.252
159	13.25	1.13	0.340	(0.199)	0.088	0.252
160	13.33	1.13	0.340	(0.198)	0.088	0.252
161	13.42	1.13	0.340	(0.197)	0.088	0.252
162	13.50	1.13	0.340	(0.196)	0.088	0.252
163	13.58	0.77	0.230	(0.195)	0.060	0.170
164	13.67	0.77	0.230	(0.194)	0.060	0.170
165	13.75	0.77	0.230	(0.193)	0.060	0.170
166	13.83	0.77	0.230	(0.192)	0.060	0.170
167	13.92	0.77	0.230	(0.191)	0.060	0.170
168	14.00	0.77	0.230	(0.190)	0.060	0.170
169	14.08	0.90	0.270	(0.189)	0.070	0.200
170	14.17	0.90	0.270	(0.189)	0.070	0.200
171	14.25	0.90	0.270	(0.188)	0.070	0.200
172	14.33	0.87	0.260	(0.187)	0.068	0.192
173	14.42	0.87	0.260	(0.186)	0.068	0.192
174	14.50	0.87	0.260	(0.185)	0.068	0.192
175	14.58	0.87	0.260	(0.184)	0.068	0.192
176	14.67	0.87	0.260	(0.183)	0.068	0.192
177	14.75	0.87	0.260	(0.182)	0.068	0.192
178	14.83	0.83	0.250	(0.181)	0.065	0.185
179	14.92	0.83	0.250	(0.180)	0.065	0.185
180	15.00	0.83	0.250	(0.179)	0.065	0.185
181	15.08	0.80	0.240	(0.178)	0.062	0.178
182	15.17	0.80	0.240	(0.177)	0.062	0.178
183	15.25	0.80	0.240	(0.176)	0.062	0.178
184	15.33	0.77	0.230	(0.175)	0.060	0.170
185	15.42	0.77	0.230	(0.175)	0.060	0.170
186	15.50	0.77	0.230	(0.174)	0.060	0.170
187	15.58	0.63	0.190	(0.173)	0.049	0.141
188	15.67	0.63	0.190	(0.172)	0.049	0.141

189	15.75	0.63	0.190	(0.171)	0.049	0.141
190	15.83	0.63	0.190	(0.170)	0.049	0.141
191	15.92	0.63	0.190	(0.169)	0.049	0.141
192	16.00	0.63	0.190	(0.168)	0.049	0.141
193	16.08	0.13	0.040	(0.168)	0.010	0.030
194	16.17	0.13	0.040	(0.167)	0.010	0.030
195	16.25	0.13	0.040	(0.166)	0.010	0.030
196	16.33	0.13	0.040	(0.165)	0.010	0.030
197	16.42	0.13	0.040	(0.164)	0.010	0.030
198	16.50	0.13	0.040	(0.163)	0.010	0.030
199	16.58	0.10	0.030	(0.162)	0.008	0.022
200	16.67	0.10	0.030	(0.162)	0.008	0.022
201	16.75	0.10	0.030	(0.161)	0.008	0.022
202	16.83	0.10	0.030	(0.160)	0.008	0.022
203	16.92	0.10	0.030	(0.159)	0.008	0.022
204	17.00	0.10	0.030	(0.158)	0.008	0.022
205	17.08	0.17	0.050	(0.158)	0.013	0.037
206	17.17	0.17	0.050	(0.157)	0.013	0.037
207	17.25	0.17	0.050	(0.156)	0.013	0.037
208	17.33	0.17	0.050	(0.155)	0.013	0.037
209	17.42	0.17	0.050	(0.154)	0.013	0.037
210	17.50	0.17	0.050	(0.154)	0.013	0.037
211	17.58	0.17	0.050	(0.153)	0.013	0.037
212	17.67	0.17	0.050	(0.152)	0.013	0.037
213	17.75	0.17	0.050	(0.151)	0.013	0.037
214	17.83	0.13	0.040	(0.151)	0.010	0.030
215	17.92	0.13	0.040	(0.150)	0.010	0.030
216	18.00	0.13	0.040	(0.149)	0.010	0.030
217	18.08	0.13	0.040	(0.148)	0.010	0.030
218	18.17	0.13	0.040	(0.148)	0.010	0.030
219	18.25	0.13	0.040	(0.147)	0.010	0.030
220	18.33	0.13	0.040	(0.146)	0.010	0.030
221	18.42	0.13	0.040	(0.146)	0.010	0.030
222	18.50	0.13	0.040	(0.145)	0.010	0.030
223	18.58	0.10	0.030	(0.144)	0.008	0.022
224	18.67	0.10	0.030	(0.143)	0.008	0.022
225	18.75	0.10	0.030	(0.143)	0.008	0.022
226	18.83	0.07	0.020	(0.142)	0.005	0.015
227	18.92	0.07	0.020	(0.141)	0.005	0.015
228	19.00	0.07	0.020	(0.141)	0.005	0.015
229	19.08	0.10	0.030	(0.140)	0.008	0.022
230	19.17	0.10	0.030	(0.139)	0.008	0.022
231	19.25	0.10	0.030	(0.139)	0.008	0.022
232	19.33	0.13	0.040	(0.138)	0.010	0.030
233	19.42	0.13	0.040	(0.137)	0.010	0.030
234	19.50	0.13	0.040	(0.137)	0.010	0.030
235	19.58	0.10	0.030	(0.136)	0.008	0.022
236	19.67	0.10	0.030	(0.136)	0.008	0.022
237	19.75	0.10	0.030	(0.135)	0.008	0.022
238	19.83	0.07	0.020	(0.134)	0.005	0.015
239	19.92	0.07	0.020	(0.134)	0.005	0.015
240	20.00	0.07	0.020	(0.133)	0.005	0.015
241	20.08	0.10	0.030	(0.133)	0.008	0.022
242	20.17	0.10	0.030	(0.132)	0.008	0.022
243	20.25	0.10	0.030	(0.131)	0.008	0.022
244	20.33	0.10	0.030	(0.131)	0.008	0.022
245	20.42	0.10	0.030	(0.130)	0.008	0.022
246	20.50	0.10	0.030	(0.130)	0.008	0.022
247	20.58	0.10	0.030	(0.129)	0.008	0.022
248	20.67	0.10	0.030	(0.129)	0.008	0.022
249	20.75	0.10	0.030	(0.128)	0.008	0.022
250	20.83	0.07	0.020	(0.128)	0.005	0.015
251	20.92	0.07	0.020	(0.127)	0.005	0.015
252	21.00	0.07	0.020	(0.127)	0.005	0.015
253	21.08	0.10	0.030	(0.126)	0.008	0.022
254	21.17	0.10	0.030	(0.126)	0.008	0.022
255	21.25	0.10	0.030	(0.125)	0.008	0.022
256	21.33	0.07	0.020	(0.125)	0.005	0.015
257	21.42	0.07	0.020	(0.124)	0.005	0.015
258	21.50	0.07	0.020	(0.124)	0.005	0.015
259	21.58	0.10	0.030	(0.123)	0.008	0.022
260	21.67	0.10	0.030	(0.123)	0.008	0.022
261	21.75	0.10	0.030	(0.122)	0.008	0.022

```
262  21.83     0.07      0.020       (  0.122)       0.005        0.015
263  21.92     0.07      0.020       (  0.121)       0.005        0.015
264  22.00     0.07      0.020       (  0.121)       0.005        0.015
265  22.08     0.10      0.030       (  0.121)       0.008        0.022
266  22.17     0.10      0.030       (  0.120)       0.008        0.022
267  22.25     0.10      0.030       (  0.120)       0.008        0.022
268  22.33     0.07      0.020       (  0.120)       0.005        0.015
269  22.42     0.07      0.020       (  0.119)       0.005        0.015
270  22.50     0.07      0.020       (  0.119)       0.005        0.015
271  22.58     0.07      0.020       (  0.118)       0.005        0.015
272  22.67     0.07      0.020       (  0.118)       0.005        0.015
273  22.75     0.07      0.020       (  0.118)       0.005        0.015
274  22.83     0.07      0.020       (  0.117)       0.005        0.015
275  22.92     0.07      0.020       (  0.117)       0.005        0.015
276  23.00     0.07      0.020       (  0.117)       0.005        0.015
277  23.08     0.07      0.020       (  0.117)       0.005        0.015
278  23.17     0.07      0.020       (  0.116)       0.005        0.015
279  23.25     0.07      0.020       (  0.116)       0.005        0.015
280  23.33     0.07      0.020       (  0.116)       0.005        0.015
281  23.42     0.07      0.020       (  0.116)       0.005        0.015
282  23.50     0.07      0.020       (  0.115)       0.005        0.015
283  23.58     0.07      0.020       (  0.115)       0.005        0.015
284  23.67     0.07      0.020       (  0.115)       0.005        0.015
285  23.75     0.07      0.020       (  0.115)       0.005        0.015
286  23.83     0.07      0.020       (  0.115)       0.005        0.015
287  23.92     0.07      0.020       (  0.115)       0.005        0.015
288  24.00     0.07      0.020       (  0.115)       0.005        0.015
               (Loss Rate Not Used)
    Sum =     100.0                                  Sum =    22.2
      Flood volume = Effective rainfall      1.85(In)
       times area      13.8(Ac.)/[(In)/(Ft.)] =       2.1(Ac.Ft)
      Total soil loss =      0.65(In)
      Total soil loss =     0.749(Ac.Ft)
      Total rainfall =      2.50(In)
      Flood volume =       92805.7 Cubic Feet
      Total soil loss =       32607.4 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      3.506(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                   Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0006      0.09  Q         |         |         |         |
   0+10       0.0019      0.18  Q         |         |         |         |
   0+15       0.0032      0.20  Q         |         |         |         |
   0+20       0.0050      0.25  VQ        |         |         |         |
   0+25       0.0070      0.30  VQ        |         |         |         |
   0+30       0.0091      0.31  VQ        |         |         |         |
   0+35       0.0112      0.31  VQ        |         |         |         |
   0+40       0.0134      0.31  VQ        |         |         |         |
   0+45       0.0155      0.31  VQ        |         |         |         |
   0+50       0.0179      0.36  VQ        |         |         |         |
   0+55       0.0207      0.40  VQ        |         |         |         |
   1+ 0       0.0235      0.41  VQ        |         |         |         |
   1+ 5       0.0260      0.37  VQ        |         |         |         |
   1+10       0.0283      0.32  VQ        |         |         |         |
   1+15       0.0304      0.31  VQ        |         |         |         |
   1+20       0.0325      0.31  VQ        |         |         |         |
   1+25       0.0347      0.31  VQ        |         |         |         |
   1+30       0.0368      0.31  VQ        |         |         |         |
   1+35       0.0389      0.31  VQ        |         |         |         |
   1+40       0.0411      0.31  VQ        |         |         |         |
   1+45       0.0432      0.31  VQ        |         |         |         |
   1+50       0.0456      0.36  VQ        |         |         |         |
   1+55       0.0484      0.40  VQ        |         |         |         |
   2+ 0       0.0512      0.41  VQ        |         |         |         |
   2+ 5       0.0540      0.41  |Q        |         |         |         |
```

```
2+10      0.0569      0.41  |Q        |         |         |         |
2+15      0.0597      0.41  |Q        |         |         |         |
2+20      0.0626      0.41  |Q        |         |         |         |
2+25      0.0654      0.41  |Q        |         |         |         |
2+30      0.0683      0.41  |Q        |         |         |         |
2+35      0.0714      0.46  |Q        |         |         |         |
2+40      0.0749      0.50  |VQ       |         |         |         |
2+45      0.0784      0.51  |VQ       |         |         |         |
2+50      0.0819      0.52  |VQ       |         |         |         |
2+55      0.0855      0.52  |VQ       |         |         |         |
3+ 0      0.0890      0.52  |VQ       |         |         |         |
3+ 5      0.0926      0.52  |VQ       |         |         |         |
3+10      0.0961      0.52  |VQ       |         |         |         |
3+15      0.0997      0.52  |VQ       |         |         |         |
3+20      0.1032      0.52  |VQ       |         |         |         |
3+25      0.1068      0.52  | Q       |         |         |         |
3+30      0.1103      0.52  | Q       |         |         |         |
3+35      0.1139      0.52  | Q       |         |         |         |
3+40      0.1174      0.52  | Q       |         |         |         |
3+45      0.1210      0.52  | Q       |         |         |         |
3+50      0.1249      0.56  | Q       |         |         |         |
3+55      0.1290      0.61  | Q       |         |         |         |
4+ 0      0.1333      0.61  | Q       |         |         |         |
4+ 5      0.1375      0.62  | Q       |         |         |         |
4+10      0.1418      0.62  | Q       |         |         |         |
4+15      0.1461      0.62  | Q       |         |         |         |
4+20      0.1506      0.66  | Q       |         |         |         |
4+25      0.1555      0.71  | Q       |         |         |         |
4+30      0.1605      0.72  | QV      |         |         |         |
4+35      0.1654      0.72  | QV      |         |         |         |
4+40      0.1704      0.72  | QV      |         |         |         |
4+45      0.1754      0.72  | QV      |         |         |         |
4+50      0.1807      0.77  |  Q      |         |         |         |
4+55      0.1862      0.81  |  Q      |         |         |         |
5+ 0      0.1919      0.82  |  Q      |         |         |         |
5+ 5      0.1969      0.73  | QV      |         |         |         |
5+10      0.2014      0.64  | QV      |         |         |         |
5+15      0.2057      0.63  | QV      |         |         |         |
5+20      0.2103      0.66  | QV      |         |         |         |
5+25      0.2152      0.71  | Q V     |         |         |         |
5+30      0.2201      0.72  | Q V     |         |         |         |
5+35      0.2254      0.77  |  QV     |         |         |         |
5+40      0.2310      0.81  |  QV     |         |         |         |
5+45      0.2366      0.82  |  QV     |         |         |         |
5+50      0.2423      0.82  |  QV     |         |         |         |
5+55      0.2480      0.82  |  QV     |         |         |         |
6+ 0      0.2537      0.82  |  QV     |         |         |         |
6+ 5      0.2597      0.87  |  QV     |         |         |         |
6+10      0.2660      0.91  |  QV     |         |         |         |
6+15      0.2723      0.92  |  Q V    |         |         |         |
6+20      0.2787      0.93  |  Q V    |         |         |         |
6+25      0.2851      0.93  |  Q V    |         |         |         |
6+30      0.2915      0.93  |  Q V    |         |         |         |
6+35      0.2982      0.97  |  Q V    |         |         |         |
6+40      0.3052      1.02  |   QV    |         |         |         |
6+45      0.3123      1.03  |   QV    |         |         |         |
6+50      0.3194      1.03  |   QV    |         |         |         |
6+55      0.3265      1.03  |   Q V   |         |         |         |
7+ 0      0.3336      1.03  |   Q V   |         |         |         |
7+ 5      0.3407      1.03  |   Q V   |         |         |         |
7+10      0.3478      1.03  |   Q V   |         |         |         |
7+15      0.3549      1.03  |   Q V   |         |         |         |
7+20      0.3623      1.08  |   Q V   |         |         |         |
7+25      0.3701      1.12  |   Q V   |         |         |         |
7+30      0.3778      1.13  |   Q  V  |         |         |         |
7+35      0.3860      1.18  |   Q  V  |         |         |         |
7+40      0.3944      1.22  |   Q  V  |         |         |         |
7+45      0.4029      1.23  |   Q  V  |         |         |         |
7+50      0.4117      1.28  |    Q V  |         |         |         |
7+55      0.4209      1.33  |    Q V  |         |         |         |
8+ 0      0.4301      1.34  |    Q  V |         |         |         |
8+ 5      0.4399      1.43  |    Q  V |         |         |         |
8+10      0.4504      1.52  |     Q V |         |         |         |
```

```
 8+15      0.4610      1.54  |     Q V |         |         |         |
 8+20      0.4717      1.55  |     Q V |         |         |         |
 8+25      0.4823      1.55  |     Q  V|         |         |         |
 8+30      0.4930      1.55  |     Q  V|         |         |         |
 8+35      0.5039      1.59  |     Q  V|         |         |         |
 8+40      0.5152      1.64  |     Q  V|         |         |         |
 8+45      0.5265      1.65  |     Q  V|         |         |         |
 8+50      0.5382      1.70  |     Q   V         |         |         |
 8+55      0.5502      1.74  |     Q   V         |         |         |
 9+ 0      0.5622      1.75  |     Q   V         |         |         |
 9+ 5      0.5749      1.84  |      Q  V         |         |         |
 9+10      0.5883      1.93  |      Q  |V        |         |         |
 9+15      0.6017      1.95  |      Q  |V        |         |         |
 9+20      0.6155      2.00  |       Q |V        |         |         |
 9+25      0.6296      2.05  |       Q |V        |         |         |
 9+30      0.6438      2.06  |       Q |  V      |         |         |
 9+35      0.6583      2.11  |       Q |  V      |         |         |
 9+40      0.6731      2.15  |       Q |  V      |         |         |
 9+45      0.6880      2.16  |       Q |  V      |         |         |
 9+50      0.7032      2.21  |       Q |   V     |         |         |
 9+55      0.7188      2.26  |        Q|   V     |         |         |
10+ 0      0.7344      2.26  |        Q|   V     |         |         |
10+ 5      0.7478      1.95  |      Q  |    V    |         |         |
10+10      0.7591      1.64  |     Q   |    V    |         |         |
10+15      0.7699      1.58  |     Q   |    V    |         |         |
10+20      0.7806      1.55  |     Q   |    V    |         |         |
10+25      0.7912      1.55  |     Q   |    V    |         |         |
10+30      0.8019      1.55  |     Q   |     V   |         |         |
10+35      0.8141      1.78  |      Q  |     V   |         |         |
10+40      0.8279      2.00  |      Q  |     V   |         |         |
10+45      0.8419      2.04  |       Q |     V   |         |         |
10+50      0.8561      2.06  |       Q |      V  |         |         |
10+55      0.8703      2.06  |       Q |      V  |         |         |
11+ 0      0.8845      2.06  |       Q |      V  |         |         |
11+ 5      0.8984      2.02  |       Q |      V  |         |         |
11+10      0.9120      1.97  |      Q  |       V |         |         |
11+15      0.9255      1.96  |      Q  |       V |         |         |
11+20      0.9390      1.96  |      Q  |       V |         |         |
11+25      0.9525      1.96  |      Q  |       V |         |         |
11+30      0.9660      1.96  |      Q  |        V|         |         |
11+35      0.9789      1.87  |      Q  |        V|         |         |
11+40      0.9911      1.78  |      Q  |        V|         |         |
11+45      1.0033      1.76  |      Q  |        V|         |         |
11+50      1.0156      1.80  |      Q  |         V|        |         |
11+55      1.0283      1.84  |      Q  |         V|        |         |
12+ 0      1.0411      1.85  |      Q  |         V|        |         |
12+ 5      1.0561      2.18  |       Q |         V|        |         |
12+10      1.0732      2.49  |        Q|          V        |         |
12+15      1.0908      2.55  |         Q          V        |         |
12+20      1.1088      2.62  |         Q          V        |         |
12+25      1.1272      2.67  |         Q          |V       |         |
12+30      1.1456      2.68  |         Q          |V       |         |
12+35      1.1647      2.77  |         |Q         |V       |         |
12+40      1.1844      2.86  |         |Q         |  V     |         |
12+45      1.2043      2.88  |         |Q         |  V     |         |
12+50      1.2245      2.93  |         |Q         |  V     |         |
12+55      1.2450      2.98  |         |Q         |   V    |         |
13+ 0      1.2655      2.99  |         |Q         |   V    |         |
13+ 5      1.2877      3.22  |         | Q        |    V   |         |
13+10      1.3114      3.44  |         |  Q       |    V   |         |
13+15      1.3354      3.48  |         |  Q       |     V  |         |
13+20      1.3595      3.51  |         |   Q      |     V  |         |
13+25      1.3837      3.51  |         |   Q      |     V  |         |
13+30      1.4078      3.51  |         |   Q      |      V |         |
13+35      1.4285      3.00  |         | Q        |      V |         |
13+40      1.4458      2.52  |         Q          |       V|         |
13+45      1.4625      2.42  |        Q|          |       V|         |
13+50      1.4788      2.37  |        Q|          |       V|         |
13+55      1.4952      2.37  |        Q|          |        V|        |
14+ 0      1.5115      2.37  |        Q|          |        V|        |
14+ 5      1.5291      2.55  |         Q          |        V|        |
14+10      1.5479      2.73  |         Q          |         V|       |
14+15      1.5670      2.77  |         |Q         |         V|       |
```

```
14+20       1.5858      2.74  |          Q          |          V|          |
14+25       1.6044      2.69  |          Q          |           V          |
14+30       1.6229      2.69  |          Q          |           V          |
14+35       1.6413      2.68  |          Q          |           V          |
14+40       1.6598      2.68  |          Q          |          |V          |
14+45       1.6783      2.68  |          Q          |          |V          |
14+50       1.6964      2.64  |          Q          |          |V          |
14+55       1.7143      2.59  |          Q          |          | V         |
15+ 0       1.7320      2.58  |          Q          |          | V         |
15+ 5       1.7495      2.53  |          Q          |          | V         |
15+10       1.7666      2.49  |         Q|          |          |  V        |
15+15       1.7837      2.48  |         Q|          |          |  V        |
15+20       1.8004      2.43  |         Q|          |          |  V        |
15+25       1.8168      2.38  |         Q|          |          |   V       |
15+30       1.8332      2.38  |         Q|          |          |   V       |
15+35       1.8483      2.19  |        Q |          |          |   V       |
15+40       1.8621      2.01  |        Q |          |          |   V       |
15+45       1.8757      1.98  |       Q  |          |          |    V      |
15+50       1.8892      1.96  |       Q  |          |          |    V      |
15+55       1.9027      1.96  |       Q  |          |          |    V      |
16+ 0       1.9162      1.96  |       Q  |          |          |    V      |
16+ 5       1.9250      1.27  |     Q    |          |          |     V     |
16+10       1.9292      0.61  |  Q       |          |          |     V     |
16+15       1.9325      0.48  |Q         |          |          |     V     |
16+20       1.9353      0.41  |Q         |          |          |     V     |
16+25       1.9381      0.41  |Q         |          |          |     V     |
16+30       1.9410      0.41  |Q         |          |          |     V     |
16+35       1.9435      0.37  |Q         |          |          |     V     |
16+40       1.9457      0.32  |Q         |          |          |     V     |
16+45       1.9479      0.31  |Q         |          |          |     V     |
16+50       1.9500      0.31  |Q         |          |          |     V     |
16+55       1.9521      0.31  |Q         |          |          |     V     |
17+ 0       1.9543      0.31  |Q         |          |          |     V     |
17+ 5       1.9570      0.40  |Q         |          |          |     V     |
17+10       1.9604      0.49  |Q         |          |          |     V     |
17+15       1.9639      0.51  | Q        |          |          |     V     |
17+20       1.9675      0.52  | Q        |          |          |     V     |
17+25       1.9710      0.52  | Q        |          |          |      V    |
17+30       1.9746      0.52  | Q        |          |          |      V    |
17+35       1.9781      0.52  | Q        |          |          |      V    |
17+40       1.9817      0.52  | Q        |          |          |      V    |
17+45       1.9852      0.52  | Q        |          |          |      V    |
17+50       1.9884      0.47  |Q         |          |          |      V    |
17+55       1.9914      0.43  |Q         |          |          |      V    |
18+ 0       1.9942      0.42  |Q         |          |          |      V    |
18+ 5       1.9971      0.41  |Q         |          |          |      V    |
18+10       1.9999      0.41  |Q         |          |          |      V    |
18+15       2.0028      0.41  |Q         |          |          |      V    |
18+20       2.0056      0.41  |Q         |          |          |      V    |
18+25       2.0084      0.41  |Q         |          |          |      V    |
18+30       2.0113      0.41  |Q         |          |          |      V    |
18+35       2.0138      0.37  |Q         |          |          |      V    |
18+40       2.0160      0.32  |Q         |          |          |      V    |
18+45       2.0182      0.31  |Q         |          |          |      V    |
18+50       2.0200      0.26  |Q         |          |          |      V    |
18+55       2.0215      0.22  Q          |          |          |      V    |
19+ 0       2.0230      0.21  Q          |          |          |      V    |
19+ 5       2.0247      0.25  |Q         |          |          |       V   |
19+10       2.0267      0.30  |Q         |          |          |       V   |
19+15       2.0288      0.31  |Q         |          |          |       V   |
19+20       2.0313      0.36  |Q         |          |          |       V   |
19+25       2.0340      0.40  |Q         |          |          |       V   |
19+30       2.0369      0.41  |Q         |          |          |       V   |
19+35       2.0394      0.37  |Q         |          |          |       V   |
19+40       2.0416      0.32  |Q         |          |          |       V   |
19+45       2.0438      0.31  |Q         |          |          |       V   |
19+50       2.0456      0.26  |Q         |          |          |       V   |
19+55       2.0471      0.22  Q          |          |          |       V   |
20+ 0       2.0485      0.21  Q          |          |          |       V   |
20+ 5       2.0503      0.25  |Q         |          |          |       V   |
20+10       2.0523      0.30  |Q         |          |          |       V   |
20+15       2.0544      0.31  |Q         |          |          |       V   |
20+20       2.0565      0.31  |Q         |          |          |       V   |
```

```
   20+25       2.0587      0.31  |Q        |         |         |       V |
   20+30       2.0608      0.31  |Q        |         |         |       V |
   20+35       2.0629      0.31  |Q        |         |         |       V |
   20+40       2.0651      0.31  |Q        |         |         |       V |
   20+45       2.0672      0.31  |Q        |         |         |       V |
   20+50       2.0690      0.26  |Q        |         |         |       V |
   20+55       2.0705      0.22  Q         |         |         |       V |
   21+ 0       2.0720      0.21  Q         |         |         |       V |
   21+ 5       2.0737      0.25  |Q        |         |         |       V |
   21+10       2.0757      0.30  |Q        |         |         |       V |
   21+15       2.0779      0.31  |Q        |         |         |        V|
   21+20       2.0797      0.26  |Q        |         |         |        V|
   21+25       2.0812      0.22  Q         |         |         |        V|
   21+30       2.0826      0.21  Q         |         |         |        V|
   21+35       2.0844      0.25  |Q        |         |         |        V|
   21+40       2.0864      0.30  |Q        |         |         |        V|
   21+45       2.0885      0.31  |Q        |         |         |        V|
   21+50       2.0903      0.26  |Q        |         |         |        V|
   21+55       2.0918      0.22  Q         |         |         |        V|
   22+ 0       2.0933      0.21  Q         |         |         |        V|
   22+ 5       2.0950      0.25  |Q        |         |         |        V|
   22+10       2.0971      0.30  |Q        |         |         |        V|
   22+15       2.0992      0.31  |Q        |         |         |        V|
   22+20       2.1010      0.26  |Q        |         |         |        V|
   22+25       2.1025      0.22  Q         |         |         |        V|
   22+30       2.1039      0.21  Q         |         |         |        V|
   22+35       2.1054      0.21  Q         |         |         |        V|
   22+40       2.1068      0.21  Q         |         |         |        V|
   22+45       2.1082      0.21  Q         |         |         |        V|
   22+50       2.1096      0.21  Q         |         |         |        V|
   22+55       2.1110      0.21  Q         |         |         |        V|
   23+ 0       2.1125      0.21  Q         |         |         |        V|
   23+ 5       2.1139      0.21  Q         |         |         |        V|
   23+10       2.1153      0.21  Q         |         |         |        V|
   23+15       2.1167      0.21  Q         |         |         |        V|
   23+20       2.1181      0.21  Q         |         |         |        V|
   23+25       2.1196      0.21  Q         |         |         |        V|
   23+30       2.1210      0.21  Q         |         |         |        V|
   23+35       2.1224      0.21  Q         |         |         |        V|
   23+40       2.1238      0.21  Q         |         |         |        V|
   23+45       2.1252      0.21  Q         |         |         |        V|
   23+50       2.1267      0.21  Q         |         |         |        V|
   23+55       2.1281      0.21  Q         |         |         |        V|
   24+ 0       2.1295      0.21  Q         |         |         |        V|
   24+ 5       2.1303      0.11  Q         |         |         |        V|
   24+10       2.1305      0.03  Q         |         |         |        V|
   24+15       2.1305      0.01  Q         |         |         |         V
-------------------------------------------------------------------------
```

- **Area 'B' – 10 Year 1 Hour Developed Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: PRB010110.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 6407

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
DEVELOPED CONDITION UNIT HYDROGRAPH - 10 YEAR 1 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
Drainage Area =      13.82(Ac.)  =      0.022 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      13.82(Ac.)  =      0.022 Sq. Mi.
Length along longest watercourse =    1877.00(Ft.)
Length along longest watercourse measured to centroid =     480.00(Ft.)
Length along longest watercourse =      0.355 Mi.
Length along longest watercourse measured to centroid =      0.091 Mi.
Difference in elevation =      36.50(Ft.)
Slope along watercourse =    102.6745 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time =    0.041 Hr.
Lag time =     2.43 Min.
25% of lag time =     0.61 Min.
40% of lag time =     0.97 Min.
Unit time =     5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           0.55                 7.60

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           1.45                20.04

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    0.550(In)
Area Averaged 100-Year Rainfall =    1.450(In)

Point rain (area averaged) =    0.920(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    0.920(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    13.820           40.80          0.800
 Total Area Entered =     13.82(Ac.)
```

```
      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
      40.8  40.8      0.662     0.800        0.185       1.000      0.185
                                                       Sum (F) =    0.185
      Area averaged mean soil loss (F) (In/Hr) =  0.185
      Minimum soil loss rate ((In/Hr)) =  0.093
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.260
      ------------------------------------------------------------------------
      Slope of intensity-duration curve for a 1 hour storm =0.4800
      ------------------------------------------------------------------------

                  U n i t  H y d r o g r a p h
                         VALLEY S-Curve
      ------------------------------------------------------------------------
                  Unit Hydrograph Data
      ------------------------------------------------------------------------
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
          (hrs)                          Graph %           (CFS)
      ------------------------------------------------------------------------
          1   0.083        205.640         44.359             6.178
          2   0.167        411.280         42.976             5.986
          3   0.250        616.920          8.568             1.193
          4   0.333        822.560          4.097             0.571
                                    Sum = 100.000   Sum=      13.928
-------------------------------------------------------------------------

 The following loss rate calculations reflect use of the minimum calculated loss
 rate subtracted from the Storm Rain to produce the maximum Effective Rain value

  Unit Time   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)         Max   |   Low         (In/Hr)
   1   0.08     4.40      0.486       (  0.185)       0.126        0.360
   2   0.17     4.50      0.497       (  0.185)       0.129        0.368
   3   0.25     5.40      0.596       (  0.185)       0.155        0.441
   4   0.33     5.40      0.596       (  0.185)       0.155        0.441
   5   0.42     5.70      0.629       (  0.185)       0.164        0.466
   6   0.50     6.40      0.707       (  0.185)       0.184        0.523
   7   0.58     7.90      0.872          0.185    (  0.227)        0.687
   8   0.67     9.10      1.005          0.185    (  0.261)        0.819
   9   0.75    12.80      1.413          0.185    (  0.367)        1.228
  10   0.83    25.60      2.827          0.185    (  0.735)        2.641
  11   0.92     7.90      0.872          0.185    (  0.227)        0.687
  12   1.00     4.90      0.541       (  0.185)       0.141        0.400
               (Loss Rate Not Used)
     Sum =     100.0                                  Sum =     9.1
        Flood volume = Effective rainfall      0.76(In)
         times area      13.8(Ac.)/[(In)/(Ft.)] =       0.9(Ac.Ft)
        Total soil loss =      0.17(In)
        Total soil loss =     0.190(Ac.Ft)
        Total rainfall =      0.92(In)
        Flood volume =       37880.8 Cubic Feet
        Total soil loss =        8280.1 Cubic Feet
        ------------------------------------------------------------------------
         Peak flow rate of this hydrograph =     25.052(CFS)
        ------------------------------------------------------------------------
        ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                            1 - H O U R    S T O R M
                        R u n o f f      H y d r o g r a p h
        ------------------------------------------------------------------------
                     Hydrograph in   5   Minute intervals ((CFS))

        ------------------------------------------------------------------------
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
  ------------------------------------------------------------------------
    0+ 5       0.0153      2.22  V Q       |         |         |         |
    0+10       0.0458      4.43  | V  Q    |         |         |         |
    0+15       0.0827      5.36  |  V   Q  |         |         |         |
    0+20       0.1241      6.01  |    V  Q |         |         |         |
    0+25       0.1672      6.26  |      VQ |         |         |         |
    0+30       0.2141      6.80  |        Q|         |         |         |
    0+35       0.2704      8.19  |         Q V       |         |         |
```

```
   0+40       0.3398     10.07  |          |  Q V     |          |          |
   0+45       0.4336     13.62  |          |        QV|          |          |
   0+50       0.6061     25.05  |          |          |      V   |  Q       |
   0+55       0.7576     22.00  |          |          |        Q|   V      |
   1+ 0       0.8295     10.44  |          |  Q       |          |        V |
   1+ 5       0.8621      4.73  |     Q    |          |          |         V|
   1+10       0.8680      0.87  |Q         |          |          |         V|
   1+15       0.8696      0.23  Q          |          |          |          V
--------------------------------------------------------------------------
```

- **Area 'B' – 10 Year 3 Hour Developed Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: PRB010310.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 6407

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
DEVELOPED CONDITION UNIT HYDROGRAPH - 10 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
Drainage Area =      13.82(Ac.)  =      0.022 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      13.82(Ac.)  =      0.022 Sq. Mi.
Length along longest watercourse =    1877.00(Ft.)
Length along longest watercourse measured to centroid =     480.00(Ft.)
Length along longest watercourse =      0.355 Mi.
Length along longest watercourse measured to centroid =      0.091 Mi.
Difference in elevation =      36.50(Ft.)
Slope along watercourse =    102.6745 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time =    0.041 Hr.
Lag time =     2.43 Min.
25% of lag time =     0.61 Min.
40% of lag time =     0.97 Min.
Unit time =     5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           1.00                 13.82

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           2.50                 34.55

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    1.000(In)
Area Averaged 100-Year Rainfall =    2.500(In)

Point rain (area averaged) =    1.617(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    1.617(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    13.820           40.80          0.800
 Total Area Entered =     13.82(Ac.)
```

```
      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
      40.8  40.8      0.662     0.800        0.185       1.000      0.185
                                                       Sum (F) =    0.185
      Area averaged mean soil loss (F) (In/Hr) =  0.185
      Minimum soil loss rate ((In/Hr)) =  0.093
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.260
      ------------------------------------------------------------------------

                  U n i t  H y d r o g r a p h
                         VALLEY S-Curve
      ------------------------------------------------------------------------
                  Unit Hydrograph Data
      ------------------------------------------------------------------------
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
          (hrs)                           Graph %           (CFS)
      ------------------------------------------------------------------------
          1   0.083        205.640         44.359             6.178
          2   0.167        411.280         42.976             5.986
          3   0.250        616.920          8.568             1.193
          4   0.333        822.560          4.097             0.571
                                  Sum = 100.000   Sum=      13.928
-------------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Pattern	Storm Rain	Loss rate(In./Hr)		Effective
(Hr.)	Percent	(In/Hr)	Max	Low	(In/Hr)
1 0.08	1.30	0.252	(0.185)	0.066	0.187
2 0.17	1.30	0.252	(0.185)	0.066	0.187
3 0.25	1.10	0.213	(0.185)	0.055	0.158
4 0.33	1.50	0.291	(0.185)	0.076	0.215
5 0.42	1.50	0.291	(0.185)	0.076	0.215
6 0.50	1.80	0.349	(0.185)	0.091	0.258
7 0.58	1.50	0.291	(0.185)	0.076	0.215
8 0.67	1.80	0.349	(0.185)	0.091	0.258
9 0.75	1.80	0.349	(0.185)	0.091	0.258
10 0.83	1.50	0.291	(0.185)	0.076	0.215
11 0.92	1.60	0.310	(0.185)	0.081	0.230
12 1.00	1.80	0.349	(0.185)	0.091	0.258
13 1.08	2.20	0.427	(0.185)	0.111	0.316
14 1.17	2.20	0.427	(0.185)	0.111	0.316
15 1.25	2.20	0.427	(0.185)	0.111	0.316
16 1.33	2.00	0.388	(0.185)	0.101	0.287
17 1.42	2.60	0.505	(0.185)	0.131	0.373
18 1.50	2.70	0.524	(0.185)	0.136	0.388
19 1.58	2.40	0.466	(0.185)	0.121	0.345
20 1.67	2.70	0.524	(0.185)	0.136	0.388
21 1.75	3.30	0.640	(0.185)	0.166	0.474
22 1.83	3.10	0.602	(0.185)	0.156	0.445
23 1.92	2.90	0.563	(0.185)	0.146	0.416
24 2.00	3.00	0.582	(0.185)	0.151	0.431
25 2.08	3.10	0.602	(0.185)	0.156	0.445
26 2.17	4.20	0.815	0.185	(0.212)	0.630
27 2.25	5.00	0.970	0.185	(0.252)	0.785
28 2.33	3.50	0.679	(0.185)	0.177	0.503
29 2.42	6.80	1.319	0.185	(0.343)	1.134
30 2.50	7.30	1.417	0.185	(0.368)	1.231
31 2.58	8.20	1.591	0.185	(0.414)	1.406
32 2.67	5.90	1.145	0.185	(0.298)	0.959
33 2.75	2.00	0.388	(0.185)	0.101	0.287
34 2.83	1.80	0.349	(0.185)	0.091	0.258
35 2.92	1.80	0.349	(0.185)	0.091	0.258
36 3.00	0.60	0.116	(0.185)	0.030	0.086
	(Loss Rate Not Used)				
Sum =	100.0			Sum =	15.1

```
   Flood volume = Effective rainfall      1.26(In)
    times area      13.8(Ac.)/[(In)/(Ft.)] =       1.5(Ac.Ft)
   Total soil loss =      0.36(In)
   Total soil loss =     0.410(Ac.Ft)
```

```
      Total rainfall =      1.62(In)
      Flood volume =       63266.4 Cubic Feet
      Total soil loss =       17853.7 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =     17.703(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          3 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
 ------------------------------------------------------------------------
   0+ 5       0.0079      1.15  V Q       |          |          |          |
   0+10       0.0236      2.27  V   Q     |          |          |          |
   0+15       0.0396      2.32  |V  Q     |          |          |          |
   0+20       0.0575      2.61  |V   Q    |          |          |          |
   0+25       0.0776      2.92  | V  Q    |          |          |          |
   0+30       0.0999      3.23  | V   Q   |          |          |          |
   0+35       0.1223      3.26  |  V  Q   |          |          |          |
   0+40       0.1452      3.32  |  V  Q   |          |          |          |
   0+45       0.1696      3.55  |   V  Q  |          |          |          |
   0+50       0.1924      3.31  |    VQ   |          |          |          |
   0+55       0.2142      3.17  |    VQ   |          |          |          |
   1+ 0       0.2375      3.38  |     Q   |          |          |          |
   1+ 5       0.2643      3.90  |      Q  |          |          |          |
   1+10       0.2939      4.28  |       Q |          |          |          |
   1+15       0.3239      4.37  |       Q |          |          |          |
   1+20       0.3530      4.22  |       QV|          |          |          |
   1+25       0.3846      4.59  |        QV          |          |          |
   1+30       0.4201      5.16  |         QV         |          |          |
   1+35       0.4550      5.06  |         Q V        |          |          |
   1+40       0.4904      5.14  |         Q  V       |          |          |
   1+45       0.5309      5.88  |         |Q  V      |          |          |
   1+50       0.5739      6.25  |         | Q  V     |          |          |
   1+55       0.6154      6.03  |         | Q   V    |          |          |
   2+ 0       0.6565      5.96  |         |Q      V  |          |          |
   2+ 5       0.6984      6.08  |         | Q       V|          |          |
   2+10       0.7487      7.31  |         |   Q     V          |          |
   2+15       0.8134      9.40  |         |       Q | V        |          |
   2+20       0.8741      8.81  |         |      Q  |   V      |          |
   2+25       0.9521     11.32  |         |         | Q   V    |          |
   2+30       1.0585     15.45  |         |         |       VQ          |
   2+35       1.1804     17.70  |         |         |         | V  Q     |
   2+40       1.2938     16.47  |         |         |         | Q  V     |
   2+45       1.3620      9.90  |         |        Q|         |      V   |
   2+50       1.3983      5.27  |         |Q        |         |       V  |
   2+55       1.4261      4.04  |        Q |         |         |        V|
   3+ 0       1.4436      2.55  |    Q     |         |         |        V|
   3+ 5       1.4503      0.97  |Q         |         |         |        V|
   3+10       1.4521      0.25  Q          |         |         |        V|
   3+15       1.4524      0.05  Q          |         |         |        V|
------------------------------------------------------------------------
```

- **Area 'B' – 10 Year 6 Hour Developed Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: PRB010610.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 6407

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
DEVELOPED CONDITION UNIT HYDROGRAPH - 10 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
Drainage Area =      13.82(Ac.)  =      0.022 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      13.82(Ac.)  =      0.022 Sq. Mi.
Length along longest watercourse =    1877.00(Ft.)
Length along longest watercourse measured to centroid =     480.00(Ft.)
Length along longest watercourse =      0.355 Mi.
Length along longest watercourse measured to centroid =      0.091 Mi.
Difference in elevation =      36.50(Ft.)
Slope along watercourse =    102.6745 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time =    0.041 Hr.
Lag time =     2.43 Min.
25% of lag time =     0.61 Min.
40% of lag time =     0.97 Min.
Unit time =     5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           1.40                 19.35

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           3.00                 41.46

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    1.400(In)
Area Averaged 100-Year Rainfall =    3.000(In)

Point rain (area averaged) =    2.058(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    2.058(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    13.820           40.80          0.800
 Total Area Entered =     13.82(Ac.)
```

```
      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
      40.8  40.8      0.662     0.800        0.185       1.000      0.185
                                                       Sum (F) =    0.185
      Area averaged mean soil loss (F) (In/Hr) =  0.185
      Minimum soil loss rate ((In/Hr)) =  0.093
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.260
      ------------------------------------------------------------------------

                  U n i t  H y d r o g r a p h
                         VALLEY S-Curve
      ------------------------------------------------------------------------
                  Unit Hydrograph Data
      ------------------------------------------------------------------------
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
          (hrs)                          Graph %           (CFS)
      ------------------------------------------------------------------------
          1   0.083        205.640         44.359             6.178
          2   0.167        411.280         42.976             5.986
          3   0.250        616.920          8.568             1.193
          4   0.333        822.560          4.097             0.571
                                  Sum = 100.000   Sum=      13.928
-------------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.123	(0.185)	0.032	0.091
2	0.17	0.60	0.148	(0.185)	0.039	0.110
3	0.25	0.60	0.148	(0.185)	0.039	0.110
4	0.33	0.60	0.148	(0.185)	0.039	0.110
5	0.42	0.60	0.148	(0.185)	0.039	0.110
6	0.50	0.70	0.173	(0.185)	0.045	0.128
7	0.58	0.70	0.173	(0.185)	0.045	0.128
8	0.67	0.70	0.173	(0.185)	0.045	0.128
9	0.75	0.70	0.173	(0.185)	0.045	0.128
10	0.83	0.70	0.173	(0.185)	0.045	0.128
11	0.92	0.70	0.173	(0.185)	0.045	0.128
12	1.00	0.80	0.198	(0.185)	0.051	0.146
13	1.08	0.80	0.198	(0.185)	0.051	0.146
14	1.17	0.80	0.198	(0.185)	0.051	0.146
15	1.25	0.80	0.198	(0.185)	0.051	0.146
16	1.33	0.80	0.198	(0.185)	0.051	0.146
17	1.42	0.80	0.198	(0.185)	0.051	0.146
18	1.50	0.80	0.198	(0.185)	0.051	0.146
19	1.58	0.80	0.198	(0.185)	0.051	0.146
20	1.67	0.80	0.198	(0.185)	0.051	0.146
21	1.75	0.80	0.198	(0.185)	0.051	0.146
22	1.83	0.80	0.198	(0.185)	0.051	0.146
23	1.92	0.80	0.198	(0.185)	0.051	0.146
24	2.00	0.90	0.222	(0.185)	0.058	0.164
25	2.08	0.80	0.198	(0.185)	0.051	0.146
26	2.17	0.90	0.222	(0.185)	0.058	0.164
27	2.25	0.90	0.222	(0.185)	0.058	0.164
28	2.33	0.90	0.222	(0.185)	0.058	0.164
29	2.42	0.90	0.222	(0.185)	0.058	0.164
30	2.50	0.90	0.222	(0.185)	0.058	0.164
31	2.58	0.90	0.222	(0.185)	0.058	0.164
32	2.67	0.90	0.222	(0.185)	0.058	0.164
33	2.75	1.00	0.247	(0.185)	0.064	0.183
34	2.83	1.00	0.247	(0.185)	0.064	0.183
35	2.92	1.00	0.247	(0.185)	0.064	0.183
36	3.00	1.00	0.247	(0.185)	0.064	0.183
37	3.08	1.00	0.247	(0.185)	0.064	0.183
38	3.17	1.10	0.272	(0.185)	0.071	0.201
39	3.25	1.10	0.272	(0.185)	0.071	0.201
40	3.33	1.10	0.272	(0.185)	0.071	0.201
41	3.42	1.20	0.296	(0.185)	0.077	0.219
42	3.50	1.30	0.321	(0.185)	0.083	0.238

```
 43   3.58     1.40      0.346       (  0.185)       0.090        0.256
 44   3.67     1.40      0.346       (  0.185)       0.090        0.256
 45   3.75     1.50      0.370       (  0.185)       0.096        0.274
 46   3.83     1.50      0.370       (  0.185)       0.096        0.274
 47   3.92     1.60      0.395       (  0.185)       0.103        0.292
 48   4.00     1.60      0.395       (  0.185)       0.103        0.292
 49   4.08     1.70      0.420       (  0.185)       0.109        0.311
 50   4.17     1.80      0.445       (  0.185)       0.116        0.329
 51   4.25     1.90      0.469       (  0.185)       0.122        0.347
 52   4.33     2.00      0.494       (  0.185)       0.128        0.366
 53   4.42     2.10      0.519       (  0.185)       0.135        0.384
 54   4.50     2.10      0.519       (  0.185)       0.135        0.384
 55   4.58     2.20      0.543       (  0.185)       0.141        0.402
 56   4.67     2.30      0.568       (  0.185)       0.148        0.420
 57   4.75     2.40      0.593       (  0.185)       0.154        0.439
 58   4.83     2.40      0.593       (  0.185)       0.154        0.439
 59   4.92     2.50      0.617       (  0.185)       0.161        0.457
 60   5.00     2.60      0.642       (  0.185)       0.167        0.475
 61   5.08     3.10      0.766          0.185    (  0.199)        0.580
 62   5.17     3.60      0.889          0.185    (  0.231)        0.704
 63   5.25     3.90      0.963          0.185    (  0.250)        0.778
 64   5.33     4.20      1.037          0.185    (  0.270)        0.852
 65   5.42     4.70      1.161          0.185    (  0.302)        0.975
 66   5.50     5.60      1.383          0.185    (  0.360)        1.198
 67   5.58     1.90      0.469       (  0.185)       0.122        0.347
 68   5.67     0.90      0.222       (  0.185)       0.058        0.164
 69   5.75     0.60      0.148       (  0.185)       0.039        0.110
 70   5.83     0.50      0.123       (  0.185)       0.032        0.091
 71   5.92     0.30      0.074       (  0.185)       0.019        0.055
 72   6.00     0.20      0.049       (  0.185)       0.013        0.037
             (Loss Rate Not Used)
   Sum =     100.0                                    Sum =    18.8
     Flood volume = Effective rainfall      1.56(In)
      times area      13.8(Ac.)/[(In)/(Ft.)] =       1.8(Ac.Ft)
     Total soil loss =      0.49(In)
     Total soil loss =     0.568(Ac.Ft)
     Total rainfall =      2.06(In)
     Flood volume =       78493.1 Cubic Feet
     Total soil loss =       24757.6 Cubic Feet
     ---------------------------------------------------------------------
      Peak flow rate of this hydrograph =     14.706(CFS)
     ---------------------------------------------------------------------
     +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          6 - H O U R    S T O R M
                      R u n o f f      H y d r o g r a p h
     ---------------------------------------------------------------------
                   Hydrograph in   5   Minute intervals ((CFS))

     ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
-------------------------------------------------------------------------
  0+ 5       0.0039      0.56  VQ        |          |          |          |
  0+10       0.0123      1.23  V Q       |          |          |          |
  0+15       0.0223      1.44  V Q       |          |          |          |
  0+20       0.0327      1.52  V  Q      |          |          |          |
  0+25       0.0432      1.53  V  Q      |          |          |          |
  0+30       0.0545      1.64  |V Q      |          |          |          |
  0+35       0.0666      1.75  |V Q      |          |          |          |
  0+40       0.0788      1.77  |V Q      |          |          |          |
  0+45       0.0911      1.78  | VQ      |          |          |          |
  0+50       0.1034      1.78  | VQ      |          |          |          |
  0+55       0.1156      1.78  | VQ      |          |          |          |
  1+ 0       0.1287      1.90  | VQ      |          |          |          |
  1+ 5       0.1425      2.01  |  VQ     |          |          |          |
  1+10       0.1565      2.03  |  VQ     |          |          |          |
  1+15       0.1705      2.04  |  VQ     |          |          |          |
  1+20       0.1845      2.04  |   Q     |          |          |          |
  1+25       0.1986      2.04  |   Q     |          |          |          |
  1+30       0.2126      2.04  |   Q     |          |          |          |
  1+35       0.2266      2.04  |   QV    |          |          |          |
  1+40       0.2407      2.04  |   QV    |          |          |          |
  1+45       0.2547      2.04  |   QV    |          |          |          |
  1+50       0.2687      2.04  |   QV    |          |          |          |
```

```
   1+55       0.2828      2.04  |   Q V   |         |         |         |
   2+ 0       0.2976      2.15  |   Q V   |         |         |         |
   2+ 5       0.3124      2.15  |   Q V   |         |         |         |
   2+10       0.3273      2.17  |   Q  V  |         |         |         |
   2+15       0.3430      2.27  |   Q  V  |         |         |         |
   2+20       0.3587      2.28  |   Q  V  |         |         |         |
   2+25       0.3745      2.29  |   Q   V |         |         |         |
   2+30       0.3902      2.29  |   Q   V |         |         |         |
   2+35       0.4060      2.29  |   Q    V|         |         |         |
   2+40       0.4218      2.29  |   Q    V|         |         |         |
   2+45       0.4384      2.41  |   Q    V|         |         |         |
   2+50       0.4557      2.51  |    Q    V         |         |         |
   2+55       0.4732      2.54  |    Q    V         |         |         |
   3+ 0       0.4907      2.55  |    Q    V         |         |         |
   3+ 5       0.5082      2.55  |    Q    |V        |         |         |
   3+10       0.5266      2.66  |    Q    |V        |         |         |
   3+15       0.5456      2.77  |    Q    | V       |         |         |
   3+20       0.5649      2.79  |    Q    | V       |         |         |
   3+25       0.5849      2.91  |    Q    | V       |         |         |
   3+30       0.6065      3.14  |     Q   |  V      |         |         |
   3+35       0.6298      3.38  |     Q   |  V      |         |         |
   3+40       0.6541      3.52  |      Q  |   V     |         |         |
   3+45       0.6793      3.67  |      Q  |    V    |         |         |
   3+50       0.7054      3.79  |      Q  |    V    |         |         |
   3+55       0.7325      3.92  |      Q  |     V   |         |         |
   4+ 0       0.7603      4.04  |       Q |     V   |         |         |
   4+ 5       0.7891      4.18  |       Q |      V  |         |         |
   4+10       0.8194      4.41  |       Q |       V |         |         |
   4+15       0.8515      4.65  |        Q|       V |         |         |
   4+20       0.8853      4.91  |        Q|        V|         |         |
   4+25       0.9209      5.16  |         Q         V         |         |
   4+30       0.9574      5.31  |         Q         |V        |         |
   4+35       0.9950      5.45  |         Q         | V       |         |
   4+40       1.0341      5.68  |         |Q        | V       |         |
   4+45       1.0749      5.93  |         |Q        |  V      |         |
   4+50       1.1167      6.07  |         | Q       |   V     |         |
   4+55       1.1595      6.21  |         | Q       |    V    |         |
   5+ 0       1.2039      6.45  |         | Q       |     V   |         |
   5+ 5       1.2537      7.23  |         |   Q     |      V  |         |
   5+10       1.3133      8.65  |         |      Q  |         V|         |
   5+15       1.3821      9.99  |         |        Q|          V        |
   5+20       1.4585     11.10  |         |         | Q       | V       |
   5+25       1.5443     12.46  |         |         |   Q     |   V     |
   5+30       1.6456     14.71  |         |         |         Q|     V   |
   5+35       1.7212     10.97  |         |         |Q        |       V |
   5+40       1.7562      5.08  |         Q         |         |       V |
   5+45       1.7752      2.76  |    Q    |         |         |        V|
   5+50       1.7863      1.62  |  Q      |         |         |        V|
   5+55       1.7940      1.11  | Q       |         |         |        V|
   6+ 0       1.7990      0.73  |Q        |         |         |        V|
   6+ 5       1.8013      0.34  Q         |         |         |        V|
   6+10       1.8018      0.07  Q         |         |         |        V|
   6+15       1.8020      0.02  Q         |         |         |         V
------------------------------------------------------------------------
```

- **Area 'B' – 10 Year 24 Hour Developed Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: PRB0102410.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 6407

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
DEVELOPED CONDITION UNIT HYDROGRAPH - 10 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
Drainage Area =      13.82(Ac.)  =      0.022 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      13.82(Ac.)  =      0.022 Sq. Mi.
Length along longest watercourse =    1877.00(Ft.)
Length along longest watercourse measured to centroid =     480.00(Ft.)
Length along longest watercourse =      0.355 Mi.
Length along longest watercourse measured to centroid =      0.091 Mi.
Difference in elevation =      36.50(Ft.)
Slope along watercourse =    102.6745 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time =    0.041 Hr.
Lag time =     2.43 Min.
25% of lag time =     0.61 Min.
40% of lag time =     0.97 Min.
Unit time =     5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           2.50                 34.55

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           8.00                110.56

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    2.500(In)
Area Averaged 100-Year Rainfall =    8.000(In)

Point rain (area averaged) =    4.763(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    4.763(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    13.820           40.80          0.800
 Total Area Entered =     13.82(Ac.)
```

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
40.8	40.8	0.662	0.800	0.185	1.000	0.185
					Sum (F) =	0.185

Area averaged mean soil loss (F) (In/Hr) = 0.185
Minimum soil loss rate ((In/Hr)) = 0.093
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.260

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	205.640	44.359	6.178
2	0.167	411.280	42.976	5.986
3	0.250	616.920	8.568	1.193
4	0.333	822.560	4.097	0.571
			Sum = 100.000	Sum= 13.928

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.038	(0.329)	0.010	0.028
2	0.17	0.07	0.038	(0.327)	0.010	0.028
3	0.25	0.07	0.038	(0.326)	0.010	0.028
4	0.33	0.10	0.057	(0.325)	0.015	0.042
5	0.42	0.10	0.057	(0.324)	0.015	0.042
6	0.50	0.10	0.057	(0.322)	0.015	0.042
7	0.58	0.10	0.057	(0.321)	0.015	0.042
8	0.67	0.10	0.057	(0.320)	0.015	0.042
9	0.75	0.10	0.057	(0.319)	0.015	0.042
10	0.83	0.13	0.076	(0.317)	0.020	0.056
11	0.92	0.13	0.076	(0.316)	0.020	0.056
12	1.00	0.13	0.076	(0.315)	0.020	0.056
13	1.08	0.10	0.057	(0.314)	0.015	0.042
14	1.17	0.10	0.057	(0.312)	0.015	0.042
15	1.25	0.10	0.057	(0.311)	0.015	0.042
16	1.33	0.10	0.057	(0.310)	0.015	0.042
17	1.42	0.10	0.057	(0.309)	0.015	0.042
18	1.50	0.10	0.057	(0.307)	0.015	0.042
19	1.58	0.10	0.057	(0.306)	0.015	0.042
20	1.67	0.10	0.057	(0.305)	0.015	0.042
21	1.75	0.10	0.057	(0.304)	0.015	0.042
22	1.83	0.13	0.076	(0.302)	0.020	0.056
23	1.92	0.13	0.076	(0.301)	0.020	0.056
24	2.00	0.13	0.076	(0.300)	0.020	0.056
25	2.08	0.13	0.076	(0.299)	0.020	0.056
26	2.17	0.13	0.076	(0.298)	0.020	0.056
27	2.25	0.13	0.076	(0.296)	0.020	0.056
28	2.33	0.13	0.076	(0.295)	0.020	0.056
29	2.42	0.13	0.076	(0.294)	0.020	0.056
30	2.50	0.13	0.076	(0.293)	0.020	0.056
31	2.58	0.17	0.095	(0.292)	0.025	0.070
32	2.67	0.17	0.095	(0.290)	0.025	0.070
33	2.75	0.17	0.095	(0.289)	0.025	0.070
34	2.83	0.17	0.095	(0.288)	0.025	0.070
35	2.92	0.17	0.095	(0.287)	0.025	0.070
36	3.00	0.17	0.095	(0.286)	0.025	0.070
37	3.08	0.17	0.095	(0.284)	0.025	0.070
38	3.17	0.17	0.095	(0.283)	0.025	0.070
39	3.25	0.17	0.095	(0.282)	0.025	0.070
40	3.33	0.17	0.095	(0.281)	0.025	0.070
41	3.42	0.17	0.095	(0.280)	0.025	0.070
42	3.50	0.17	0.095	(0.279)	0.025	0.070

43	3.58	0.17	0.095	(0.277)	0.025	0.070
44	3.67	0.17	0.095	(0.276)	0.025	0.070
45	3.75	0.17	0.095	(0.275)	0.025	0.070
46	3.83	0.20	0.114	(0.274)	0.030	0.085
47	3.92	0.20	0.114	(0.273)	0.030	0.085
48	4.00	0.20	0.114	(0.272)	0.030	0.085
49	4.08	0.20	0.114	(0.270)	0.030	0.085
50	4.17	0.20	0.114	(0.269)	0.030	0.085
51	4.25	0.20	0.114	(0.268)	0.030	0.085
52	4.33	0.23	0.133	(0.267)	0.035	0.099
53	4.42	0.23	0.133	(0.266)	0.035	0.099
54	4.50	0.23	0.133	(0.265)	0.035	0.099
55	4.58	0.23	0.133	(0.264)	0.035	0.099
56	4.67	0.23	0.133	(0.262)	0.035	0.099
57	4.75	0.23	0.133	(0.261)	0.035	0.099
58	4.83	0.27	0.152	(0.260)	0.040	0.113
59	4.92	0.27	0.152	(0.259)	0.040	0.113
60	5.00	0.27	0.152	(0.258)	0.040	0.113
61	5.08	0.20	0.114	(0.257)	0.030	0.085
62	5.17	0.20	0.114	(0.256)	0.030	0.085
63	5.25	0.20	0.114	(0.255)	0.030	0.085
64	5.33	0.23	0.133	(0.254)	0.035	0.099
65	5.42	0.23	0.133	(0.252)	0.035	0.099
66	5.50	0.23	0.133	(0.251)	0.035	0.099
67	5.58	0.27	0.152	(0.250)	0.040	0.113
68	5.67	0.27	0.152	(0.249)	0.040	0.113
69	5.75	0.27	0.152	(0.248)	0.040	0.113
70	5.83	0.27	0.152	(0.247)	0.040	0.113
71	5.92	0.27	0.152	(0.246)	0.040	0.113
72	6.00	0.27	0.152	(0.245)	0.040	0.113
73	6.08	0.30	0.171	(0.244)	0.045	0.127
74	6.17	0.30	0.171	(0.243)	0.045	0.127
75	6.25	0.30	0.171	(0.241)	0.045	0.127
76	6.33	0.30	0.171	(0.240)	0.045	0.127
77	6.42	0.30	0.171	(0.239)	0.045	0.127
78	6.50	0.30	0.171	(0.238)	0.045	0.127
79	6.58	0.33	0.191	(0.237)	0.050	0.141
80	6.67	0.33	0.191	(0.236)	0.050	0.141
81	6.75	0.33	0.191	(0.235)	0.050	0.141
82	6.83	0.33	0.191	(0.234)	0.050	0.141
83	6.92	0.33	0.191	(0.233)	0.050	0.141
84	7.00	0.33	0.191	(0.232)	0.050	0.141
85	7.08	0.33	0.191	(0.231)	0.050	0.141
86	7.17	0.33	0.191	(0.230)	0.050	0.141
87	7.25	0.33	0.191	(0.229)	0.050	0.141
88	7.33	0.37	0.210	(0.228)	0.054	0.155
89	7.42	0.37	0.210	(0.227)	0.054	0.155
90	7.50	0.37	0.210	(0.226)	0.054	0.155
91	7.58	0.40	0.229	(0.225)	0.059	0.169
92	7.67	0.40	0.229	(0.224)	0.059	0.169
93	7.75	0.40	0.229	(0.222)	0.059	0.169
94	7.83	0.43	0.248	(0.221)	0.064	0.183
95	7.92	0.43	0.248	(0.220)	0.064	0.183
96	8.00	0.43	0.248	(0.219)	0.064	0.183
97	8.08	0.50	0.286	(0.218)	0.074	0.211
98	8.17	0.50	0.286	(0.217)	0.074	0.211
99	8.25	0.50	0.286	(0.216)	0.074	0.211
100	8.33	0.50	0.286	(0.215)	0.074	0.211
101	8.42	0.50	0.286	(0.214)	0.074	0.211
102	8.50	0.50	0.286	(0.213)	0.074	0.211
103	8.58	0.53	0.305	(0.212)	0.079	0.226
104	8.67	0.53	0.305	(0.211)	0.079	0.226
105	8.75	0.53	0.305	(0.210)	0.079	0.226
106	8.83	0.57	0.324	(0.209)	0.084	0.240
107	8.92	0.57	0.324	(0.208)	0.084	0.240
108	9.00	0.57	0.324	(0.207)	0.084	0.240
109	9.08	0.63	0.362	(0.206)	0.094	0.268
110	9.17	0.63	0.362	(0.205)	0.094	0.268
111	9.25	0.63	0.362	(0.204)	0.094	0.268
112	9.33	0.67	0.381	(0.203)	0.099	0.282
113	9.42	0.67	0.381	(0.203)	0.099	0.282
114	9.50	0.67	0.381	(0.202)	0.099	0.282
115	9.58	0.70	0.400	(0.201)	0.104	0.296

116	9.67	0.70	0.400	(0.200)	0.104	0.296
117	9.75	0.70	0.400	(0.199)	0.104	0.296
118	9.83	0.73	0.419	(0.198)	0.109	0.310
119	9.92	0.73	0.419	(0.197)	0.109	0.310
120	10.00	0.73	0.419	(0.196)	0.109	0.310
121	10.08	0.50	0.286	(0.195)	0.074	0.211
122	10.17	0.50	0.286	(0.194)	0.074	0.211
123	10.25	0.50	0.286	(0.193)	0.074	0.211
124	10.33	0.50	0.286	(0.192)	0.074	0.211
125	10.42	0.50	0.286	(0.191)	0.074	0.211
126	10.50	0.50	0.286	(0.190)	0.074	0.211
127	10.58	0.67	0.381	(0.189)	0.099	0.282
128	10.67	0.67	0.381	(0.188)	0.099	0.282
129	10.75	0.67	0.381	(0.187)	0.099	0.282
130	10.83	0.67	0.381	(0.186)	0.099	0.282
131	10.92	0.67	0.381	(0.186)	0.099	0.282
132	11.00	0.67	0.381	(0.185)	0.099	0.282
133	11.08	0.63	0.362	(0.184)	0.094	0.268
134	11.17	0.63	0.362	(0.183)	0.094	0.268
135	11.25	0.63	0.362	(0.182)	0.094	0.268
136	11.33	0.63	0.362	(0.181)	0.094	0.268
137	11.42	0.63	0.362	(0.180)	0.094	0.268
138	11.50	0.63	0.362	(0.179)	0.094	0.268
139	11.58	0.57	0.324	(0.178)	0.084	0.240
140	11.67	0.57	0.324	(0.177)	0.084	0.240
141	11.75	0.57	0.324	(0.177)	0.084	0.240
142	11.83	0.60	0.343	(0.176)	0.089	0.254
143	11.92	0.60	0.343	(0.175)	0.089	0.254
144	12.00	0.60	0.343	(0.174)	0.089	0.254
145	12.08	0.83	0.476	(0.173)	0.124	0.352
146	12.17	0.83	0.476	(0.172)	0.124	0.352
147	12.25	0.83	0.476	(0.171)	0.124	0.352
148	12.33	0.87	0.495	(0.170)	0.129	0.367
149	12.42	0.87	0.495	(0.170)	0.129	0.367
150	12.50	0.87	0.495	(0.169)	0.129	0.367
151	12.58	0.93	0.533	(0.168)	0.139	0.395
152	12.67	0.93	0.533	(0.167)	0.139	0.395
153	12.75	0.93	0.533	(0.166)	0.139	0.395
154	12.83	0.97	0.552	(0.165)	0.144	0.409
155	12.92	0.97	0.552	(0.165)	0.144	0.409
156	13.00	0.97	0.552	(0.164)	0.144	0.409
157	13.08	1.13	0.648	0.163	(0.168)	0.485
158	13.17	1.13	0.648	0.162	(0.168)	0.486
159	13.25	1.13	0.648	0.161	(0.168)	0.486
160	13.33	1.13	0.648	0.160	(0.168)	0.487
161	13.42	1.13	0.648	0.160	(0.168)	0.488
162	13.50	1.13	0.648	0.159	(0.168)	0.489
163	13.58	0.77	0.438	(0.158)	0.114	0.324
164	13.67	0.77	0.438	(0.157)	0.114	0.324
165	13.75	0.77	0.438	(0.156)	0.114	0.324
166	13.83	0.77	0.438	(0.156)	0.114	0.324
167	13.92	0.77	0.438	(0.155)	0.114	0.324
168	14.00	0.77	0.438	(0.154)	0.114	0.324
169	14.08	0.90	0.514	(0.153)	0.134	0.381
170	14.17	0.90	0.514	(0.152)	0.134	0.381
171	14.25	0.90	0.514	(0.152)	0.134	0.381
172	14.33	0.87	0.495	(0.151)	0.129	0.367
173	14.42	0.87	0.495	(0.150)	0.129	0.367
174	14.50	0.87	0.495	(0.149)	0.129	0.367
175	14.58	0.87	0.495	(0.149)	0.129	0.367
176	14.67	0.87	0.495	(0.148)	0.129	0.367
177	14.75	0.87	0.495	(0.147)	0.129	0.367
178	14.83	0.83	0.476	(0.146)	0.124	0.352
179	14.92	0.83	0.476	(0.146)	0.124	0.352
180	15.00	0.83	0.476	(0.145)	0.124	0.352
181	15.08	0.80	0.457	(0.144)	0.119	0.338
182	15.17	0.80	0.457	(0.143)	0.119	0.338
183	15.25	0.80	0.457	(0.143)	0.119	0.338
184	15.33	0.77	0.438	(0.142)	0.114	0.324
185	15.42	0.77	0.438	(0.141)	0.114	0.324
186	15.50	0.77	0.438	(0.140)	0.114	0.324
187	15.58	0.63	0.362	(0.140)	0.094	0.268
188	15.67	0.63	0.362	(0.139)	0.094	0.268

189	15.75	0.63	0.362	(0.138)	0.094	0.268
190	15.83	0.63	0.362	(0.138)	0.094	0.268
191	15.92	0.63	0.362	(0.137)	0.094	0.268
192	16.00	0.63	0.362	(0.136)	0.094	0.268
193	16.08	0.13	0.076	(0.135)	0.020	0.056
194	16.17	0.13	0.076	(0.135)	0.020	0.056
195	16.25	0.13	0.076	(0.134)	0.020	0.056
196	16.33	0.13	0.076	(0.133)	0.020	0.056
197	16.42	0.13	0.076	(0.133)	0.020	0.056
198	16.50	0.13	0.076	(0.132)	0.020	0.056
199	16.58	0.10	0.057	(0.131)	0.015	0.042
200	16.67	0.10	0.057	(0.131)	0.015	0.042
201	16.75	0.10	0.057	(0.130)	0.015	0.042
202	16.83	0.10	0.057	(0.129)	0.015	0.042
203	16.92	0.10	0.057	(0.129)	0.015	0.042
204	17.00	0.10	0.057	(0.128)	0.015	0.042
205	17.08	0.17	0.095	(0.127)	0.025	0.070
206	17.17	0.17	0.095	(0.127)	0.025	0.070
207	17.25	0.17	0.095	(0.126)	0.025	0.070
208	17.33	0.17	0.095	(0.126)	0.025	0.070
209	17.42	0.17	0.095	(0.125)	0.025	0.070
210	17.50	0.17	0.095	(0.124)	0.025	0.070
211	17.58	0.17	0.095	(0.124)	0.025	0.070
212	17.67	0.17	0.095	(0.123)	0.025	0.070
213	17.75	0.17	0.095	(0.122)	0.025	0.070
214	17.83	0.13	0.076	(0.122)	0.020	0.056
215	17.92	0.13	0.076	(0.121)	0.020	0.056
216	18.00	0.13	0.076	(0.121)	0.020	0.056
217	18.08	0.13	0.076	(0.120)	0.020	0.056
218	18.17	0.13	0.076	(0.119)	0.020	0.056
219	18.25	0.13	0.076	(0.119)	0.020	0.056
220	18.33	0.13	0.076	(0.118)	0.020	0.056
221	18.42	0.13	0.076	(0.118)	0.020	0.056
222	18.50	0.13	0.076	(0.117)	0.020	0.056
223	18.58	0.10	0.057	(0.117)	0.015	0.042
224	18.67	0.10	0.057	(0.116)	0.015	0.042
225	18.75	0.10	0.057	(0.115)	0.015	0.042
226	18.83	0.07	0.038	(0.115)	0.010	0.028
227	18.92	0.07	0.038	(0.114)	0.010	0.028
228	19.00	0.07	0.038	(0.114)	0.010	0.028
229	19.08	0.10	0.057	(0.113)	0.015	0.042
230	19.17	0.10	0.057	(0.113)	0.015	0.042
231	19.25	0.10	0.057	(0.112)	0.015	0.042
232	19.33	0.13	0.076	(0.112)	0.020	0.056
233	19.42	0.13	0.076	(0.111)	0.020	0.056
234	19.50	0.13	0.076	(0.111)	0.020	0.056
235	19.58	0.10	0.057	(0.110)	0.015	0.042
236	19.67	0.10	0.057	(0.110)	0.015	0.042
237	19.75	0.10	0.057	(0.109)	0.015	0.042
238	19.83	0.07	0.038	(0.109)	0.010	0.028
239	19.92	0.07	0.038	(0.108)	0.010	0.028
240	20.00	0.07	0.038	(0.108)	0.010	0.028
241	20.08	0.10	0.057	(0.107)	0.015	0.042
242	20.17	0.10	0.057	(0.107)	0.015	0.042
243	20.25	0.10	0.057	(0.106)	0.015	0.042
244	20.33	0.10	0.057	(0.106)	0.015	0.042
245	20.42	0.10	0.057	(0.105)	0.015	0.042
246	20.50	0.10	0.057	(0.105)	0.015	0.042
247	20.58	0.10	0.057	(0.104)	0.015	0.042
248	20.67	0.10	0.057	(0.104)	0.015	0.042
249	20.75	0.10	0.057	(0.104)	0.015	0.042
250	20.83	0.07	0.038	(0.103)	0.010	0.028
251	20.92	0.07	0.038	(0.103)	0.010	0.028
252	21.00	0.07	0.038	(0.102)	0.010	0.028
253	21.08	0.10	0.057	(0.102)	0.015	0.042
254	21.17	0.10	0.057	(0.102)	0.015	0.042
255	21.25	0.10	0.057	(0.101)	0.015	0.042
256	21.33	0.07	0.038	(0.101)	0.010	0.028
257	21.42	0.07	0.038	(0.100)	0.010	0.028
258	21.50	0.07	0.038	(0.100)	0.010	0.028
259	21.58	0.10	0.057	(0.100)	0.015	0.042
260	21.67	0.10	0.057	(0.099)	0.015	0.042
261	21.75	0.10	0.057	(0.099)	0.015	0.042

```
262  21.83     0.07      0.038       (  0.099)       0.010        0.028
263  21.92     0.07      0.038       (  0.098)       0.010        0.028
264  22.00     0.07      0.038       (  0.098)       0.010        0.028
265  22.08     0.10      0.057       (  0.098)       0.015        0.042
266  22.17     0.10      0.057       (  0.097)       0.015        0.042
267  22.25     0.10      0.057       (  0.097)       0.015        0.042
268  22.33     0.07      0.038       (  0.097)       0.010        0.028
269  22.42     0.07      0.038       (  0.096)       0.010        0.028
270  22.50     0.07      0.038       (  0.096)       0.010        0.028
271  22.58     0.07      0.038       (  0.096)       0.010        0.028
272  22.67     0.07      0.038       (  0.096)       0.010        0.028
273  22.75     0.07      0.038       (  0.095)       0.010        0.028
274  22.83     0.07      0.038       (  0.095)       0.010        0.028
275  22.92     0.07      0.038       (  0.095)       0.010        0.028
276  23.00     0.07      0.038       (  0.095)       0.010        0.028
277  23.08     0.07      0.038       (  0.094)       0.010        0.028
278  23.17     0.07      0.038       (  0.094)       0.010        0.028
279  23.25     0.07      0.038       (  0.094)       0.010        0.028
280  23.33     0.07      0.038       (  0.094)       0.010        0.028
281  23.42     0.07      0.038       (  0.094)       0.010        0.028
282  23.50     0.07      0.038       (  0.093)       0.010        0.028
283  23.58     0.07      0.038       (  0.093)       0.010        0.028
284  23.67     0.07      0.038       (  0.093)       0.010        0.028
285  23.75     0.07      0.038       (  0.093)       0.010        0.028
286  23.83     0.07      0.038       (  0.093)       0.010        0.028
287  23.92     0.07      0.038       (  0.093)       0.010        0.028
288  24.00     0.07      0.038       (  0.093)       0.010        0.028
               (Loss Rate Not Used)
    Sum =     100.0                                  Sum =    42.3
      Flood volume = Effective rainfall      3.53(In)
       times area      13.8(Ac.)/[(In)/(Ft.)] =       4.1(Ac.Ft)
      Total soil loss =      1.23(In)
      Total soil loss =     1.422(Ac.Ft)
      Total rainfall =      4.76(In)
      Flood volume =      176993.6 Cubic Feet
      Total soil loss =       61930.6 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      6.805(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                    R u n o f f     H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0012      0.17  Q         |         |         |         |
   0+10       0.0036      0.34  VQ        |         |         |         |
   0+15       0.0062      0.38  VQ        |         |         |         |
   0+20       0.0095      0.48  VQ        |         |         |         |
   0+25       0.0134      0.56  V Q       |         |         |         |
   0+30       0.0174      0.58  V Q       |         |         |         |
   0+35       0.0214      0.59  V Q       |         |         |         |
   0+40       0.0255      0.59  V Q       |         |         |         |
   0+45       0.0295      0.59  V Q       |         |         |         |
   0+50       0.0342      0.68  V Q       |         |         |         |
   0+55       0.0394      0.76  V  Q      |         |         |         |
   1+ 0       0.0448      0.78  V  Q      |         |         |         |
   1+ 5       0.0496      0.70  V Q       |         |         |         |
   1+10       0.0538      0.61  V Q       |         |         |         |
   1+15       0.0579      0.60  V Q       |         |         |         |
   1+20       0.0620      0.59  V Q       |         |         |         |
   1+25       0.0661      0.59  V Q       |         |         |         |
   1+30       0.0701      0.59  V Q       |         |         |         |
   1+35       0.0742      0.59  V Q       |         |         |         |
   1+40       0.0782      0.59  V Q       |         |         |         |
   1+45       0.0823      0.59  V Q       |         |         |         |
   1+50       0.0870      0.68  V Q       |         |         |         |
   1+55       0.0922      0.76  V  Q      |         |         |         |
   2+ 0       0.0976      0.78  V  Q      |         |         |         |
   2+ 5       0.1030      0.79  |V Q      |         |         |         |
```

```
2+10      0.1084      0.79  |V Q      |         |         |         |
2+15      0.1138      0.79  |V Q      |         |         |         |
2+20      0.1192      0.79  |V Q      |         |         |         |
2+25      0.1246      0.79  |V Q      |         |         |         |
2+30      0.1300      0.79  |V Q      |         |         |         |
2+35      0.1360      0.87  |V Q      |         |         |         |
2+40      0.1426      0.96  |V Q      |         |         |         |
2+45      0.1493      0.97  |V Q      |         |         |         |
2+50      0.1561      0.98  |V Q      |         |         |         |
2+55      0.1629      0.98  |V Q      |         |         |         |
3+ 0      0.1696      0.98  |V Q      |         |         |         |
3+ 5      0.1764      0.98  |V Q      |         |         |         |
3+10      0.1832      0.98  |V Q      |         |         |         |
3+15      0.1899      0.98  |V Q      |         |         |         |
3+20      0.1967      0.98  |V Q      |         |         |         |
3+25      0.2035      0.98  | VQ      |         |         |         |
3+30      0.2102      0.98  | VQ      |         |         |         |
3+35      0.2170      0.98  | VQ      |         |         |         |
3+40      0.2238      0.98  | VQ      |         |         |         |
3+45      0.2305      0.98  | VQ      |         |         |         |
3+50      0.2379      1.07  | V Q     |         |         |         |
3+55      0.2458      1.15  | V Q     |         |         |         |
4+ 0      0.2539      1.17  | V Q     |         |         |         |
4+ 5      0.2620      1.18  | V Q     |         |         |         |
4+10      0.2701      1.18  | V Q     |         |         |         |
4+15      0.2782      1.18  | V Q     |         |         |         |
4+20      0.2870      1.27  | V  Q    |         |         |         |
4+25      0.2963      1.35  | V  Q    |         |         |         |
4+30      0.3057      1.37  |  V Q    |         |         |         |
4+35      0.3151      1.38  |  V Q    |         |         |         |
4+40      0.3246      1.38  |  V Q    |         |         |         |
4+45      0.3341      1.38  |  V Q    |         |         |         |
4+50      0.3442      1.46  |  V Q    |         |         |         |
4+55      0.3548      1.55  |  V  Q   |         |         |         |
5+ 0      0.3656      1.56  |  V  Q   |         |         |         |
5+ 5      0.3752      1.40  |  V Q    |         |         |         |
5+10      0.3837      1.23  |  VQ     |         |         |         |
5+15      0.3919      1.19  |  VQ     |         |         |         |
5+20      0.4006      1.27  |  V Q    |         |         |         |
5+25      0.4099      1.35  |   VQ    |         |         |         |
5+30      0.4193      1.37  |   VQ    |         |         |         |
5+35      0.4294      1.46  |   VQ    |         |         |         |
5+40      0.4400      1.55  |   V Q   |         |         |         |
5+45      0.4508      1.56  |   V Q   |         |         |         |
5+50      0.4616      1.57  |   V Q   |         |         |         |
5+55      0.4725      1.57  |   V Q   |         |         |         |
6+ 0      0.4833      1.57  |   V Q   |         |         |         |
6+ 5      0.4947      1.66  |   V Q   |         |         |         |
6+10      0.5067      1.74  |   V Q   |         |         |         |
6+15      0.5188      1.76  |    V Q  |         |         |         |
6+20      0.5310      1.77  |    V Q  |         |         |         |
6+25      0.5432      1.77  |    V Q  |         |         |         |
6+30      0.5554      1.77  |    V Q  |         |         |         |
6+35      0.5681      1.86  |    V Q  |         |         |         |
6+40      0.5815      1.94  |    V Q  |         |         |         |
6+45      0.5950      1.96  |    V Q  |         |         |         |
6+50      0.6085      1.96  |    V Q  |         |         |         |
6+55      0.6220      1.96  |     VQ  |         |         |         |
7+ 0      0.6356      1.96  |     VQ  |         |         |         |
7+ 5      0.6491      1.96  |     VQ  |         |         |         |
7+10      0.6626      1.96  |     VQ  |         |         |         |
7+15      0.6762      1.96  |     VQ  |         |         |         |
7+20      0.6903      2.05  |     V Q |         |         |         |
7+25      0.7050      2.14  |     V Q |         |         |         |
7+30      0.7198      2.15  |      VQ |         |         |         |
7+35      0.7353      2.25  |      VQ |         |         |         |
7+40      0.7514      2.33  |      V Q|         |         |         |
7+45      0.7675      2.35  |      V Q|         |         |         |
7+50      0.7844      2.44  |      V Q|         |         |         |
7+55      0.8018      2.53  |      V  Q         |         |         |
8+ 0      0.8193      2.55  |       V Q         |         |         |
8+ 5      0.8381      2.73  |       V Q         |         |         |
8+10      0.8581      2.90  |       V |Q        |         |         |
```

```
 8+15      0.8783     2.93  |       V |Q        |         |         |
 8+20      0.8986     2.95  |       V |Q        |         |         |
 8+25      0.9188     2.95  |        V|Q        |         |         |
 8+30      0.9391     2.95  |        V|Q        |         |         |
 8+35      0.9600     3.03  |        V| Q       |         |         |
 8+40      0.9815     3.12  |        V| Q       |         |         |
 8+45      1.0031     3.14  |        V| Q       |         |         |
 8+50      1.0253     3.23  |         V Q       |         |         |
 8+55      1.0482     3.31  |         V  Q      |         |         |
 9+ 0      1.0711     3.33  |         V  Q      |         |         |
 9+ 5      1.0953     3.51  |         V   Q     |         |         |
 9+10      1.1207     3.68  |          |V  Q     |         |         |
 9+15      1.1463     3.72  |          |V  Q     |         |         |
 9+20      1.1726     3.82  |          |V   Q    |         |         |
 9+25      1.1995     3.90  |          |V   Q    |         |         |
 9+30      1.2265     3.92  |          | V  Q    |         |         |
 9+35      1.2541     4.02  |          | V   Q   |         |         |
 9+40      1.2824     4.10  |          | V   Q   |         |         |
 9+45      1.3107     4.12  |          | V   Q   |         |         |
 9+50      1.3397     4.21  |          |  V  Q   |         |         |
 9+55      1.3693     4.30  |          |  V   Q  |         |         |
10+ 0      1.3991     4.31  |          |  V   Q  |         |         |
10+ 5      1.4246     3.71  |          |   Q     |         |         |
10+10      1.4461     3.12  |          | Q V     |         |         |
10+15      1.4668     3.00  |          | Q V     |         |         |
10+20      1.4871     2.95  |          |Q  V     |         |         |
10+25      1.5074     2.95  |          |Q  V     |         |         |
10+30      1.5277     2.95  |          |Q   V    |         |         |
10+35      1.5510     3.38  |          |  Q V    |         |         |
10+40      1.5772     3.80  |          |    Q    |         |         |
10+45      1.6040     3.89  |          |    Q    |         |         |
10+50      1.6310     3.93  |          |    QV   |         |         |
10+55      1.6581     3.93  |          |    QV   |         |         |
11+ 0      1.6851     3.93  |          |    QV   |         |         |
11+ 5      1.7116     3.84  |          |    QV   |         |         |
11+10      1.7375     3.76  |          |    Q V  |         |         |
11+15      1.7632     3.74  |          |   Q  V  |         |         |
11+20      1.7889     3.73  |          |   Q  V  |         |         |
11+25      1.8146     3.73  |          |   Q  V  |         |         |
11+30      1.8403     3.73  |          |   Q   V |         |         |
11+35      1.8649     3.56  |          |   Q   V |         |         |
11+40      1.8882     3.39  |          |  Q    V |         |         |
11+45      1.9113     3.36  |          |  Q    V |         |         |
11+50      1.9349     3.43  |          |  Q     V|         |         |
11+55      1.9591     3.51  |          |   Q    V|         |         |
12+ 0      1.9834     3.53  |          |   Q    V|         |         |
12+ 5      2.0119     4.15  |          |     Q  V|         |         |
12+10      2.0446     4.74  |          |       Q V         |         |
12+15      2.0780     4.85  |          |        QV         |         |
12+20      2.1124     5.00  |          |        QV         |         |
12+25      2.1474     5.08  |          |         QV        |         |
12+30      2.1826     5.10  |          |         QV        |         |
12+35      2.2189     5.28  |          |          |Q       |         |
12+40      2.2565     5.45  |          |          |QV      |         |
12+45      2.2942     5.48  |          |          |QV      |         |
12+50      2.3327     5.59  |          |          | Q      |         |
12+55      2.3718     5.67  |          |          | QV     |         |
13+ 0      2.4110     5.69  |          |          | QV     |         |
13+ 5      2.4534     6.17  |          |          |   Q    |         |
13+10      2.4991     6.63  |          |          |   V Q  |         |
13+15      2.5454     6.73  |          |          |    VQ  |         |
13+20      2.5921     6.78  |          |          |    V Q |         |
13+25      2.6389     6.79  |          |          |    V Q |         |
13+30      2.6858     6.80  |          |          |     VQ |         |
13+35      2.7257     5.79  |          |          |  Q  V  |         |
13+40      2.7588     4.81  |          |        Q|      V  |         |
13+45      2.7906     4.61  |          |       Q |      V  |         |
13+50      2.8217     4.52  |          |       Q |      V  |         |
13+55      2.8528     4.52  |          |       Q |       V |         |
14+ 0      2.8839     4.52  |          |       Q |       V |         |
14+ 5      2.9174     4.87  |          |        Q|       V |         |
14+10      2.9533     5.20  |          |         Q       V|         |
14+15      2.9896     5.27  |          |         |Q       V|         |
```

```
14+20       3.0255      5.22  |          |          Q        V|          |
14+25       3.0609      5.13  |          |          Q         V          |
14+30       3.0961      5.12  |          |          Q         V          |
14+35       3.1313      5.11  |          |          Q         V          |
14+40       3.1664      5.11  |          |          Q         |V         |
14+45       3.2016      5.11  |          |          Q         |V         |
14+50       3.2362      5.02  |          |          Q         |V         |
14+55       3.2702      4.94  |          |         Q|         | V        |
15+ 0       3.3041      4.92  |          |         Q|         | V        |
15+ 5       3.3373      4.82  |          |         Q|         | V        |
15+10       3.3699      4.74  |          |        Q |         |  V       |
15+15       3.4025      4.72  |          |        Q |         |  V       |
15+20       3.4343      4.63  |          |        Q |         |  V       |
15+25       3.4656      4.54  |          |        Q |         |   V      |
15+30       3.4968      4.53  |          |        Q |         |   V      |
15+35       3.5255      4.17  |          |      Q   |         |   V      |
15+40       3.5519      3.83  |          |    Q     |         |   V      |
15+45       3.5778      3.76  |          |    Q     |         |    V     |
15+50       3.6035      3.73  |          |  Q       |         |    V     |
15+55       3.6292      3.73  |          |  Q       |         |    V     |
16+ 0       3.6550      3.73  |          |  Q       |         |    V     |
16+ 5       3.6717      2.43  |        Q |          |         |     V    |
16+10       3.6796      1.16  |   Q      |          |         |     V    |
16+15       3.6859      0.91  |  Q       |          |         |     V    |
16+20       3.6913      0.79  |  Q       |          |         |     V    |
16+25       3.6967      0.79  |  Q       |          |         |     V    |
16+30       3.7021      0.79  |  Q       |          |         |     V    |
16+35       3.7069      0.70  | Q        |          |         |     V    |
16+40       3.7112      0.61  | Q        |          |         |     V    |
16+45       3.7153      0.60  | Q        |          |         |     V    |
16+50       3.7193      0.59  | Q        |          |         |     V    |
16+55       3.7234      0.59  | Q        |          |         |     V    |
17+ 0       3.7274      0.59  | Q        |          |         |     V    |
17+ 5       3.7327      0.76  |  Q       |          |         |     V    |
17+10       3.7391      0.93  |  Q       |          |         |     V    |
17+15       3.7458      0.97  |  Q       |          |         |     V    |
17+20       3.7525      0.98  |  Q       |          |         |     V    |
17+25       3.7593      0.98  |  Q       |          |         |      V   |
17+30       3.7661      0.98  |  Q       |          |         |      V   |
17+35       3.7728      0.98  |  Q       |          |         |      V   |
17+40       3.7796      0.98  |  Q       |          |         |      V   |
17+45       3.7864      0.98  |  Q       |          |         |      V   |
17+50       3.7925      0.90  |  Q       |          |         |      V   |
17+55       3.7981      0.81  |  Q       |          |         |      V   |
18+ 0       3.8036      0.79  |  Q       |          |         |      V   |
18+ 5       3.8090      0.79  |  Q       |          |         |      V   |
18+10       3.8144      0.79  |  Q       |          |         |      V   |
18+15       3.8198      0.79  |  Q       |          |         |      V   |
18+20       3.8252      0.79  |  Q       |          |         |      V   |
18+25       3.8306      0.79  |  Q       |          |         |      V   |
18+30       3.8361      0.79  |  Q       |          |         |      V   |
18+35       3.8409      0.70  | Q        |          |         |      V   |
18+40       3.8451      0.61  | Q        |          |         |      V   |
18+45       3.8492      0.60  | Q        |          |         |      V   |
18+50       3.8527      0.50  | Q        |          |         |      V   |
18+55       3.8556      0.42  |Q         |          |         |      V   |
19+ 0       3.8583      0.40  |Q         |          |         |      V   |
19+ 5       3.8616      0.48  |Q         |          |         |       V  |
19+10       3.8655      0.56  | Q        |          |         |       V  |
19+15       3.8695      0.58  | Q        |          |         |       V  |
19+20       3.8742      0.68  | Q        |          |         |       V  |
19+25       3.8794      0.76  |  Q       |          |         |       V  |
19+30       3.8848      0.78  |  Q       |          |         |       V  |
19+35       3.8896      0.70  | Q        |          |         |       V  |
19+40       3.8938      0.61  | Q        |          |         |       V  |
19+45       3.8979      0.60  | Q        |          |         |       V  |
19+50       3.9014      0.50  | Q        |          |         |       V  |
19+55       3.9043      0.42  |Q         |          |         |       V  |
20+ 0       3.9070      0.40  |Q         |          |         |       V  |
20+ 5       3.9103      0.48  |Q         |          |         |       V  |
20+10       3.9142      0.56  | Q        |          |         |       V  |
20+15       3.9182      0.58  | Q        |          |         |       V  |
20+20       3.9223      0.59  | Q        |          |         |       V  |
```

```
   20+25       3.9263      0.59  | Q       |         |         |       V |
   20+30       3.9304      0.59  | Q       |         |         |       V |
   20+35       3.9345      0.59  | Q       |         |         |       V |
   20+40       3.9385      0.59  | Q       |         |         |       V |
   20+45       3.9426      0.59  | Q       |         |         |       V |
   20+50       3.9460      0.50  | Q       |         |         |       V |
   20+55       3.9489      0.42  |Q        |         |         |       V |
   21+ 0       3.9517      0.40  |Q        |         |         |       V |
   21+ 5       3.9550      0.48  |Q        |         |         |       V |
   21+10       3.9589      0.56  | Q       |         |         |       V |
   21+15       3.9629      0.58  | Q       |         |         |        V|
   21+20       3.9663      0.50  | Q       |         |         |        V|
   21+25       3.9692      0.42  |Q        |         |         |        V|
   21+30       3.9720      0.40  |Q        |         |         |        V|
   21+35       3.9753      0.48  |Q        |         |         |        V|
   21+40       3.9792      0.56  | Q       |         |         |        V|
   21+45       3.9832      0.58  | Q       |         |         |        V|
   21+50       3.9866      0.50  | Q       |         |         |        V|
   21+55       3.9895      0.42  |Q        |         |         |        V|
   22+ 0       3.9923      0.40  |Q        |         |         |        V|
   22+ 5       3.9956      0.48  |Q        |         |         |        V|
   22+10       3.9994      0.56  | Q       |         |         |        V|
   22+15       4.0035      0.58  | Q       |         |         |        V|
   22+20       4.0069      0.50  | Q       |         |         |        V|
   22+25       4.0098      0.42  |Q        |         |         |        V|
   22+30       4.0125      0.40  |Q        |         |         |        V|
   22+35       4.0153      0.39  |Q        |         |         |        V|
   22+40       4.0180      0.39  |Q        |         |         |        V|
   22+45       4.0207      0.39  |Q        |         |         |        V|
   22+50       4.0234      0.39  |Q        |         |         |        V|
   22+55       4.0261      0.39  |Q        |         |         |        V|
   23+ 0       4.0288      0.39  |Q        |         |         |        V|
   23+ 5       4.0315      0.39  |Q        |         |         |        V|
   23+10       4.0342      0.39  |Q        |         |         |        V|
   23+15       4.0369      0.39  |Q        |         |         |        V|
   23+20       4.0396      0.39  |Q        |         |         |        V|
   23+25       4.0423      0.39  |Q        |         |         |        V|
   23+30       4.0450      0.39  |Q        |         |         |        V|
   23+35       4.0477      0.39  |Q        |         |         |        V|
   23+40       4.0504      0.39  |Q        |         |         |        V|
   23+45       4.0531      0.39  |Q        |         |         |        V|
   23+50       4.0558      0.39  |Q        |         |         |        V|
   23+55       4.0585      0.39  |Q        |         |         |        V|
   24+ 0       4.0613      0.39  |Q        |         |         |        V|
   24+ 5       4.0628      0.22  Q         |         |         |        V|
   24+10       4.0631      0.05  Q         |         |         |        V|
   24+15       4.0632      0.02  Q         |         |         |         V
-------------------------------------------------------------------------
```

- **Area 'B' – 100 Year 1 Hour Developed Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: PRB1001100.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 6407

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
DEVELOPED CONDITION UNIT HYDROGRAPH - 100 YEAR 1 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
Drainage Area =      13.82(Ac.)  =      0.022 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      13.82(Ac.)  =      0.022 Sq. Mi.
Length along longest watercourse =    1877.00(Ft.)
Length along longest watercourse measured to centroid =     480.00(Ft.)
Length along longest watercourse =      0.355 Mi.
Length along longest watercourse measured to centroid =      0.091 Mi.
Difference in elevation =      36.50(Ft.)
Slope along watercourse =    102.6745 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time =    0.041 Hr.
Lag time =     2.43 Min.
25% of lag time =     0.61 Min.
40% of lag time =     0.97 Min.
Unit time =     5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           0.55                 7.60

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           1.45                20.04

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    0.550(In)
Area Averaged 100-Year Rainfall =    1.450(In)

Point rain (area averaged) =    1.450(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    1.450(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    13.820           40.80          0.800
 Total Area Entered =     13.82(Ac.)
```

```
      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
      40.8  60.8      0.461     0.800        0.129       1.000      0.129
                                                        Sum (F) =   0.129
      Area averaged mean soil loss (F) (In/Hr) =  0.129
      Minimum soil loss rate ((In/Hr)) =  0.065
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.260
      ------------------------------------------------------------------------
      Slope of intensity-duration curve for a 1 hour storm =0.4800
      ------------------------------------------------------------------------

                  U n i t  H y d r o g r a p h
                         VALLEY S-Curve
      ------------------------------------------------------------------------
                  Unit Hydrograph Data
      ------------------------------------------------------------------------
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
          (hrs)                          Graph %           (CFS)
      ------------------------------------------------------------------------
          1   0.083        205.640         44.359             6.178
          2   0.167        411.280         42.976             5.986
          3   0.250        616.920          8.568             1.193
          4   0.333        822.560          4.097             0.571
                                    Sum = 100.000   Sum=      13.928
-------------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	4.40	0.766	0.129	(0.199)	0.636
2	0.17	4.50	0.783	0.129	(0.204)	0.654
3	0.25	5.40	0.939	0.129	(0.244)	0.810
4	0.33	5.40	0.939	0.129	(0.244)	0.810
5	0.42	5.70	0.992	0.129	(0.258)	0.862
6	0.50	6.40	1.113	0.129	(0.289)	0.984
7	0.58	7.90	1.374	0.129	(0.357)	1.245
8	0.67	9.10	1.583	0.129	(0.412)	1.454
9	0.75	12.80	2.227	0.129	(0.579)	2.098
10	0.83	25.60	4.454	0.129	(1.158)	4.325
11	0.92	7.90	1.374	0.129	(0.357)	1.245
12	1.00	4.90	0.852	0.129	(0.222)	0.723
		(Loss Rate Not Used)				
Sum =		100.0			Sum =	15.8

```
      Flood volume = Effective rainfall      1.32(In)
       times area      13.8(Ac.)/[(In)/(Ft.)] =       1.5(Ac.Ft)
      Total soil loss =      0.13(In)
      Total soil loss =     0.149(Ac.Ft)
      Total rainfall =      1.45(In)
      Flood volume =       66251.9 Cubic Feet
      Total soil loss =        6480.6 Cubic Feet
      ------------------------------------------------------------------------
       Peak flow rate of this hydrograph =     41.743(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          1 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0       12.5      25.0      37.5      50.0
 ----------------------------------------------------------------------------
   0+ 5       0.0271      3.93  V  Q      |         |         |         |
   0+10       0.0812      7.85  | V   Q   |         |         |         |
   0+15       0.1479      9.68  |  V   Q  |         |         |         |
   0+20       0.2237     11.01  |    V  Q |         |         |         |
   0+25       0.3030     11.52  |      V Q|         |         |         |
   0+30       0.3904     12.68  |         Q         |         |         |
   0+35       0.4942     15.08  |         | Q       |         |         |
```

```
   0+40       0.6190     18.11  |          |   Q V    |          |          |
   0+45       0.7824     23.72  |          |        Q V          |          |
   0+50       1.0699     41.74  |          |          |        V |  Q       |
   0+55       1.3242     36.93  |          |          |         Q|   V      |
   1+ 0       1.4502     18.29  |          |   Q      |          |        V |
   1+ 5       1.5072      8.29  |     Q    |          |          |         V|
   1+10       1.5181      1.57  |Q         |          |          |         V|
   1+15       1.5209      0.41  Q          |          |          |          V
--------------------------------------------------------------------------
```

- **Area 'B' – 100 Year 3 Hour Developed Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: PRB1003100.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 6407

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
DEVELOPED CONDITION UNIT HYDROGRAPH - 100 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
Drainage Area =      13.82(Ac.)  =      0.022 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      13.82(Ac.)  =      0.022 Sq. Mi.
Length along longest watercourse =    1877.00(Ft.)
Length along longest watercourse measured to centroid =     480.00(Ft.)
Length along longest watercourse =      0.355 Mi.
Length along longest watercourse measured to centroid =      0.091 Mi.
Difference in elevation =      36.50(Ft.)
Slope along watercourse =    102.6745 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time =    0.041 Hr.
Lag time =     2.43 Min.
25% of lag time =     0.61 Min.
40% of lag time =     0.97 Min.
Unit time =     5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           1.00                 13.82

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           2.50                 34.55

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    1.000(In)
Area Averaged 100-Year Rainfall =    2.500(In)

Point rain (area averaged) =    2.500(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    2.500(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    13.820           40.80          0.800
 Total Area Entered =     13.82(Ac.)
```

```
      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
      40.8  60.8      0.461     0.800        0.129       1.000      0.129
                                                       Sum (F) =    0.129
      Area averaged mean soil loss (F) (In/Hr) =  0.129
      Minimum soil loss rate ((In/Hr)) =  0.065
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.260
      ------------------------------------------------------------------------

                  U n i t  H y d r o g r a p h
                         VALLEY S-Curve
      ------------------------------------------------------------------------
                  Unit Hydrograph Data
      ------------------------------------------------------------------------
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
          (hrs)                           Graph %           (CFS)
      ------------------------------------------------------------------------
          1   0.083        205.640         44.359             6.178
          2   0.167        411.280         42.976             5.986
          3   0.250        616.920          8.568             1.193
          4   0.333        822.560          4.097             0.571
                                  Sum = 100.000   Sum=      13.928
-------------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Pattern	Storm Rain	Loss rate(In./Hr)			Effective
(Hr.)	Percent	(In/Hr)	Max		Low	(In/Hr)
1 0.08	1.30	0.390	(0.129)		0.101	0.289
2 0.17	1.30	0.390	(0.129)		0.101	0.289
3 0.25	1.10	0.330	(0.129)		0.086	0.244
4 0.33	1.50	0.450	(0.129)		0.117	0.333
5 0.42	1.50	0.450	(0.129)		0.117	0.333
6 0.50	1.80	0.540	0.129	(	0.140)	0.411
7 0.58	1.50	0.450	(0.129)		0.117	0.333
8 0.67	1.80	0.540	0.129	(	0.140)	0.411
9 0.75	1.80	0.540	0.129	(	0.140)	0.411
10 0.83	1.50	0.450	(0.129)		0.117	0.333
11 0.92	1.60	0.480	(0.129)		0.125	0.355
12 1.00	1.80	0.540	0.129	(	0.140)	0.411
13 1.08	2.20	0.660	0.129	(	0.172)	0.531
14 1.17	2.20	0.660	0.129	(	0.172)	0.531
15 1.25	2.20	0.660	0.129	(	0.172)	0.531
16 1.33	2.00	0.600	0.129	(	0.156)	0.471
17 1.42	2.60	0.780	0.129	(	0.203)	0.651
18 1.50	2.70	0.810	0.129	(	0.211)	0.681
19 1.58	2.40	0.720	0.129	(	0.187)	0.591
20 1.67	2.70	0.810	0.129	(	0.211)	0.681
21 1.75	3.30	0.990	0.129	(	0.257)	0.861
22 1.83	3.10	0.930	0.129	(	0.242)	0.801
23 1.92	2.90	0.870	0.129	(	0.226)	0.741
24 2.00	3.00	0.900	0.129	(	0.234)	0.771
25 2.08	3.10	0.930	0.129	(	0.242)	0.801
26 2.17	4.20	1.260	0.129	(	0.328)	1.131
27 2.25	5.00	1.500	0.129	(	0.390)	1.371
28 2.33	3.50	1.050	0.129	(	0.273)	0.921
29 2.42	6.80	2.040	0.129	(	0.530)	1.911
30 2.50	7.30	2.190	0.129	(	0.569)	2.061
31 2.58	8.20	2.460	0.129	(	0.640)	2.331
32 2.67	5.90	1.770	0.129	(	0.460)	1.641
33 2.75	2.00	0.600	0.129	(	0.156)	0.471
34 2.83	1.80	0.540	0.129	(	0.140)	0.411
35 2.92	1.80	0.540	0.129	(	0.140)	0.411
36 3.00	0.60	0.180	(0.129)		0.047	0.133
	(Loss Rate Not Used)					
Sum =	100.0				Sum =	25.6

```
   Flood volume = Effective rainfall      2.13(In)
    times area      13.8(Ac.)/[(In)/(Ft.)] =       2.5(Ac.Ft)
   Total soil loss =      0.37(In)
   Total soil loss =     0.424(Ac.Ft)
```

```
      Total rainfall =      2.50(In)
      Flood volume =      106947.5 Cubic Feet
      Total soil loss =       18461.4 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =     29.555(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          3 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                   Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
 ------------------------------------------------------------------------
   0+ 5       0.0123      1.78  V Q       |          |          |          |
   0+10       0.0365      3.51  V   Q     |          |          |          |
   0+15       0.0611      3.58  V   Q     |          |          |          |
   0+20       0.0889      4.03  |V   Q    |          |          |          |
   0+25       0.1200      4.51  |V    Q   |          |          |          |
   0+30       0.1549      5.07  | V   Q   |          |          |          |
   0+35       0.1900      5.11  |  V  Q   |          |          |          |
   0+40       0.2259      5.21  |  V  Q   |          |          |          |
   0+45       0.2647      5.63  |   V  Q  |          |          |          |
   0+50       0.3005      5.20  |   V Q   |          |          |          |
   0+55       0.3344      4.91  |    VQ   |          |          |          |
   1+ 0       0.3709      5.30  |     VQ  |          |          |          |
   1+ 5       0.4146      6.36  |     V Q |          |          |          |
   1+10       0.4639      7.15  |      V Q|          |          |          |
   1+15       0.5144      7.33  |       VQ|          |          |          |
   1+20       0.5628      7.03  |        Q|          |          |          |
   1+25       0.6163      7.78  |         Q          |          |          |
   1+30       0.6781      8.97  |         |Q         |          |          |
   1+35       0.7385      8.77  |         |QV        |          |          |
   1+40       0.8001      8.93  |         |Q V       |          |          |
   1+45       0.8723     10.49  |         |  QV      |          |          |
   1+50       0.9498     11.25  |         |    Q     |          |          |
   1+55       1.0241     10.79  |         |   Q V    |          |          |
   2+ 0       1.0975     10.65  |         |   Q  V   |          |          |
   2+ 5       1.1726     10.91  |         |   Q    V|          |          |
   2+10       1.2630     13.13  |         |      Q  V          |          |
   2+15       1.3776     16.64  |         |         | Q        |          |
   2+20       1.4858     15.71  |         |         Q   V      |          |
   2+25       1.6208     19.61  |         |         |     Q    |          |
   2+30       1.8003     26.06  |         |         |        V|   Q      |
   2+35       2.0039     29.56  |         |         |         | V       Q|
   2+40       2.1943     27.65  |         |         |         |    VQ    |
   2+45       2.3093     16.70  |         |         | Q       |      V   |
   2+50       2.3689      8.65  |         |Q        |         |       V  |
   2+55       2.4136      6.50  |       Q |         |         |        V|
   3+ 0       2.4415      4.04  |    Q    |         |         |        V|
   3+ 5       2.4519      1.52  | Q       |         |         |        V|
   3+10       2.4547      0.39  Q         |         |         |        V|
   3+15       2.4552      0.08  Q         |         |         |         V
------------------------------------------------------------------------
```

- **Area 'B' – 100 Year 6 Hour Developed Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: PRB1006100.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 6407

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
DEVELOPED CONDITION UNIT HYDROGRAPH - 100 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
Drainage Area =      13.82(Ac.)  =      0.022 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      13.82(Ac.)  =      0.022 Sq. Mi.
Length along longest watercourse =    1877.00(Ft.)
Length along longest watercourse measured to centroid =     480.00(Ft.)
Length along longest watercourse =      0.355 Mi.
Length along longest watercourse measured to centroid =      0.091 Mi.
Difference in elevation =      36.50(Ft.)
Slope along watercourse =    102.6745 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time =    0.041 Hr.
Lag time =     2.43 Min.
25% of lag time =     0.61 Min.
40% of lag time =     0.97 Min.
Unit time =     5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           1.40                 19.35

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           3.00                 41.46

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    1.400(In)
Area Averaged 100-Year Rainfall =    3.000(In)

Point rain (area averaged) =    3.000(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    3.000(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    13.820           40.80          0.800
 Total Area Entered =     13.82(Ac.)
```

```
      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
      40.8  60.8      0.461     0.800        0.129       1.000      0.129
                                                       Sum (F) =    0.129
      Area averaged mean soil loss (F) (In/Hr) =  0.129
      Minimum soil loss rate ((In/Hr)) =  0.065
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.260
      ------------------------------------------------------------------------

                  U n i t  H y d r o g r a p h
                         VALLEY S-Curve
      ------------------------------------------------------------------------
                  Unit Hydrograph Data
      ------------------------------------------------------------------------
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
          (hrs)                          Graph %           (CFS)
      ------------------------------------------------------------------------
          1   0.083        205.640         44.359             6.178
          2   0.167        411.280         42.976             5.986
          3   0.250        616.920          8.568             1.193
          4   0.333        822.560          4.097             0.571
                                  Sum = 100.000   Sum=      13.928
-------------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.180	(0.129)	0.047	0.133
2	0.17	0.60	0.216	(0.129)	0.056	0.160
3	0.25	0.60	0.216	(0.129)	0.056	0.160
4	0.33	0.60	0.216	(0.129)	0.056	0.160
5	0.42	0.60	0.216	(0.129)	0.056	0.160
6	0.50	0.70	0.252	(0.129)	0.066	0.186
7	0.58	0.70	0.252	(0.129)	0.066	0.186
8	0.67	0.70	0.252	(0.129)	0.066	0.186
9	0.75	0.70	0.252	(0.129)	0.066	0.186
10	0.83	0.70	0.252	(0.129)	0.066	0.186
11	0.92	0.70	0.252	(0.129)	0.066	0.186
12	1.00	0.80	0.288	(0.129)	0.075	0.213
13	1.08	0.80	0.288	(0.129)	0.075	0.213
14	1.17	0.80	0.288	(0.129)	0.075	0.213
15	1.25	0.80	0.288	(0.129)	0.075	0.213
16	1.33	0.80	0.288	(0.129)	0.075	0.213
17	1.42	0.80	0.288	(0.129)	0.075	0.213
18	1.50	0.80	0.288	(0.129)	0.075	0.213
19	1.58	0.80	0.288	(0.129)	0.075	0.213
20	1.67	0.80	0.288	(0.129)	0.075	0.213
21	1.75	0.80	0.288	(0.129)	0.075	0.213
22	1.83	0.80	0.288	(0.129)	0.075	0.213
23	1.92	0.80	0.288	(0.129)	0.075	0.213
24	2.00	0.90	0.324	(0.129)	0.084	0.240
25	2.08	0.80	0.288	(0.129)	0.075	0.213
26	2.17	0.90	0.324	(0.129)	0.084	0.240
27	2.25	0.90	0.324	(0.129)	0.084	0.240
28	2.33	0.90	0.324	(0.129)	0.084	0.240
29	2.42	0.90	0.324	(0.129)	0.084	0.240
30	2.50	0.90	0.324	(0.129)	0.084	0.240
31	2.58	0.90	0.324	(0.129)	0.084	0.240
32	2.67	0.90	0.324	(0.129)	0.084	0.240
33	2.75	1.00	0.360	(0.129)	0.094	0.266
34	2.83	1.00	0.360	(0.129)	0.094	0.266
35	2.92	1.00	0.360	(0.129)	0.094	0.266
36	3.00	1.00	0.360	(0.129)	0.094	0.266
37	3.08	1.00	0.360	(0.129)	0.094	0.266
38	3.17	1.10	0.396	(0.129)	0.103	0.293
39	3.25	1.10	0.396	(0.129)	0.103	0.293
40	3.33	1.10	0.396	(0.129)	0.103	0.293
41	3.42	1.20	0.432	(0.129)	0.112	0.320
42	3.50	1.30	0.468	(0.129)	0.122	0.346

```
 43   3.58     1.40      0.504          0.129    (  0.131)        0.375
 44   3.67     1.40      0.504          0.129    (  0.131)        0.375
 45   3.75     1.50      0.540          0.129    (  0.140)        0.411
 46   3.83     1.50      0.540          0.129    (  0.140)        0.411
 47   3.92     1.60      0.576          0.129    (  0.150)        0.447
 48   4.00     1.60      0.576          0.129    (  0.150)        0.447
 49   4.08     1.70      0.612          0.129    (  0.159)        0.483
 50   4.17     1.80      0.648          0.129    (  0.168)        0.519
 51   4.25     1.90      0.684          0.129    (  0.178)        0.555
 52   4.33     2.00      0.720          0.129    (  0.187)        0.591
 53   4.42     2.10      0.756          0.129    (  0.197)        0.627
 54   4.50     2.10      0.756          0.129    (  0.197)        0.627
 55   4.58     2.20      0.792          0.129    (  0.206)        0.663
 56   4.67     2.30      0.828          0.129    (  0.215)        0.699
 57   4.75     2.40      0.864          0.129    (  0.225)        0.735
 58   4.83     2.40      0.864          0.129    (  0.225)        0.735
 59   4.92     2.50      0.900          0.129    (  0.234)        0.771
 60   5.00     2.60      0.936          0.129    (  0.243)        0.807
 61   5.08     3.10      1.116          0.129    (  0.290)        0.987
 62   5.17     3.60      1.296          0.129    (  0.337)        1.167
 63   5.25     3.90      1.404          0.129    (  0.365)        1.275
 64   5.33     4.20      1.512          0.129    (  0.393)        1.383
 65   5.42     4.70      1.692          0.129    (  0.440)        1.563
 66   5.50     5.60      2.016          0.129    (  0.524)        1.887
 67   5.58     1.90      0.684          0.129    (  0.178)        0.555
 68   5.67     0.90      0.324       (  0.129)       0.084        0.240
 69   5.75     0.60      0.216       (  0.129)       0.056        0.160
 70   5.83     0.50      0.180       (  0.129)       0.047        0.133
 71   5.92     0.30      0.108       (  0.129)       0.028        0.080
 72   6.00     0.20      0.072       (  0.129)       0.019        0.053
             (Loss Rate Not Used)
   Sum =     100.0                                   Sum =    29.2
     Flood volume = Effective rainfall      2.43(In)
      times area      13.8(Ac.)/[(In)/(Ft.)] =       2.8(Ac.Ft)
     Total soil loss =      0.57(In)
     Total soil loss =     0.651(Ac.Ft)
     Total rainfall =      3.00(In)
     Flood volume =      122122.8 Cubic Feet
     Total soil loss =       28369.8 Cubic Feet
     ---------------------------------------------------------------------
      Peak flow rate of this hydrograph =     23.400(CFS)
     ---------------------------------------------------------------------
     +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          6 - H O U R    S T O R M
                      R u n o f f      H y d r o g r a p h
     ---------------------------------------------------------------------
                   Hydrograph in   5   Minute intervals ((CFS))

     ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
-------------------------------------------------------------------------
  0+ 5       0.0057      0.82  VQ        |          |          |          |
  0+10       0.0180      1.79  V Q       |          |          |          |
  0+15       0.0325      2.10  V Q       |          |          |          |
  0+20       0.0477      2.21  V Q       |          |          |          |
  0+25       0.0630      2.23  V Q       |          |          |          |
  0+30       0.0795      2.39  |V Q       |          |          |          |
  0+35       0.0971      2.55  |V Q       |          |          |          |
  0+40       0.1149      2.58  |V Q       |          |          |          |
  0+45       0.1328      2.60  |V Q       |          |          |          |
  0+50       0.1507      2.60  | VQ       |          |          |          |
  0+55       0.1686      2.60  | VQ       |          |          |          |
  1+ 0       0.1876      2.76  | VQ       |          |          |          |
  1+ 5       0.2077      2.92  | VQ       |          |          |          |
  1+10       0.2281      2.95  |  Q       |          |          |          |
  1+15       0.2485      2.97  |  Q       |          |          |          |
  1+20       0.2690      2.97  |  Q       |          |          |          |
  1+25       0.2894      2.97  |  QV      |          |          |          |
  1+30       0.3099      2.97  |  QV      |          |          |          |
  1+35       0.3303      2.97  |  QV      |          |          |          |
  1+40       0.3508      2.97  |  Q V     |          |          |          |
  1+45       0.3712      2.97  |  Q V     |          |          |          |
  1+50       0.3917      2.97  |  Q V     |          |          |          |
```

```
   1+55       0.4121      2.97  |  Q V    |         |         |         |
   2+ 0       0.4337      3.13  |   Q V   |         |         |         |
   2+ 5       0.4553      3.13  |   Q V   |         |         |         |
   2+10       0.4771      3.17  |   Q V   |         |         |         |
   2+15       0.4999      3.31  |   Q  V  |         |         |         |
   2+20       0.5228      3.33  |   Q  V  |         |         |         |
   2+25       0.5458      3.34  |   Q  V  |         |         |         |
   2+30       0.5688      3.34  |   Q   V |         |         |         |
   2+35       0.5918      3.34  |   Q   V |         |         |         |
   2+40       0.6148      3.34  |   Q   V |         |         |         |
   2+45       0.6390      3.51  |   Q    V|         |         |         |
   2+50       0.6642      3.67  |   Q    V|         |         |         |
   2+55       0.6897      3.70  |   Q    V|         |         |         |
   3+ 0       0.7152      3.71  |   Q     V         |         |         |
   3+ 5       0.7408      3.71  |   Q     V         |         |         |
   3+10       0.7675      3.88  |    Q    V         |         |         |
   3+15       0.7953      4.04  |    Q    |V        |         |         |
   3+20       0.8233      4.07  |    Q    |V        |         |         |
   3+25       0.8526      4.25  |    Q    | V       |         |         |
   3+30       0.8841      4.57  |     Q   | V       |         |         |
   3+35       0.9181      4.94  |     Q   |  V      |         |         |
   3+40       0.9536      5.16  |     Q   |  V      |         |         |
   3+45       0.9910      5.43  |      Q  |   V     |         |         |
   3+50       1.0300      5.66  |      Q  |   V     |         |         |
   3+55       1.0708      5.93  |      Q  |    V    |         |         |
   4+ 0       1.1132      6.16  |       Q |    V    |         |         |
   4+ 5       1.1575      6.43  |       Q |     V   |         |         |
   4+10       1.2049      6.89  |        Q|      V  |         |         |
   4+15       1.2557      7.37  |        Q|      V  |         |         |
   4+20       1.3099      7.87  |         Q       V |         |         |
   4+25       1.3675      8.37  |         |Q       V|         |         |
   4+30       1.4271      8.65  |         |Q        V         |         |
   4+35       1.4886      8.94  |         |Q        |V        |         |
   4+40       1.5533      9.39  |         | Q       | V       |         |
   4+45       1.6214      9.88  |         |  Q      |  V      |         |
   4+50       1.6913     10.16  |         |  Q      |   V     |         |
   4+55       1.7632     10.44  |         |  Q      |    V    |         |
   5+ 0       1.8383     10.90  |         |   Q     |     V   |         |
   5+ 5       1.9228     12.27  |         |     Q   |      V  |         |
   5+10       2.0228     14.53  |         |         Q|       V |         |
   5+15       2.1365     16.51  |         |          | Q       V         |
   5+20       2.2614     18.14  |         |          |   Q     | V       |
   5+25       2.4001     20.13  |         |          |     Q   |   V     |
   5+30       2.5612     23.40  |         |          |         |Q    V   |
   5+35       2.6809     17.38  |         |          |  Q      |       V |
   5+40       2.7357      7.95  |         Q          |         |        V|
   5+45       2.7644      4.16  |    Q    |          |         |        V|
   5+50       2.7808      2.38  |  Q      |          |         |        V|
   5+55       2.7919      1.62  | Q       |          |         |        V|
   6+ 0       2.7992      1.06  |Q        |          |         |        V|
   6+ 5       2.8026      0.49  Q         |          |         |        V|
   6+10       2.8033      0.11  Q         |          |         |        V|
   6+15       2.8036      0.03  Q         |          |         |         V
------------------------------------------------------------------------
```

- **Area 'B' – 100 Year 24 Hour Developed Condition – Unit Hydrograph**

```
        U n i t   H y d r o g r a p h   A n a l y s i s

        Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
               Study date  07/18/19 File: PRB10024100.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 6407

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



------------------------------------------------------------------------
BEDFORD COMMERCIAL SITE - PRELIMINARY SUPLIMENTAL HYDROLOGY STUDY – AREA 'B'
DEVELOPED CONDITION UNIT HYDROGRAPH - 100 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, JULY 2019
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
Drainage Area =      13.82(Ac.)  =      0.022 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      13.82(Ac.)  =      0.022 Sq. Mi.
Length along longest watercourse =    1877.00(Ft.)
Length along longest watercourse measured to centroid =     480.00(Ft.)
Length along longest watercourse =      0.355 Mi.
Length along longest watercourse measured to centroid =      0.091 Mi.
Difference in elevation =      36.50(Ft.)
Slope along watercourse =    102.6745 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time =    0.041 Hr.
Lag time =     2.43 Min.
25% of lag time =     0.61 Min.
40% of lag time =     0.97 Min.
Unit time =     5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           2.50                 34.55

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       13.82           8.00                110.56

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    2.500(In)
Area Averaged 100-Year Rainfall =    8.000(In)

Point rain (area averaged) =    8.000(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    8.000(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    13.820           40.80          0.800
 Total Area Entered =     13.82(Ac.)
```

```
      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
      40.8  60.8      0.461     0.800        0.129       1.000      0.129
                                                       Sum (F) =    0.129
      Area averaged mean soil loss (F) (In/Hr) =  0.129
      Minimum soil loss rate ((In/Hr)) =  0.065
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.260
      ------------------------------------------------------------------------

                   U n i t  H y d r o g r a p h
                          VALLEY S-Curve
      ------------------------------------------------------------------------
                   Unit Hydrograph Data
      ------------------------------------------------------------------------
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
          (hrs)                          Graph %           (CFS)
      ------------------------------------------------------------------------
          1   0.083        205.640         44.359             6.178
          2   0.167        411.280         42.976             5.986
          3   0.250        616.920          8.568             1.193
          4   0.333        822.560          4.097             0.571
                                  Sum = 100.000   Sum=      13.928
-------------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Pattern	Storm Rain	Loss rate(In./Hr)		Effective
(Hr.)	Percent	(In/Hr)	Max	Low	(In/Hr)
1 0.08	0.07	0.064	(0.229)	0.017	0.047
2 0.17	0.07	0.064	(0.228)	0.017	0.047
3 0.25	0.07	0.064	(0.227)	0.017	0.047
4 0.33	0.10	0.096	(0.226)	0.025	0.071
5 0.42	0.10	0.096	(0.225)	0.025	0.071
6 0.50	0.10	0.096	(0.225)	0.025	0.071
7 0.58	0.10	0.096	(0.224)	0.025	0.071
8 0.67	0.10	0.096	(0.223)	0.025	0.071
9 0.75	0.10	0.096	(0.222)	0.025	0.071
10 0.83	0.13	0.128	(0.221)	0.033	0.095
11 0.92	0.13	0.128	(0.220)	0.033	0.095
12 1.00	0.13	0.128	(0.219)	0.033	0.095
13 1.08	0.10	0.096	(0.218)	0.025	0.071
14 1.17	0.10	0.096	(0.218)	0.025	0.071
15 1.25	0.10	0.096	(0.217)	0.025	0.071
16 1.33	0.10	0.096	(0.216)	0.025	0.071
17 1.42	0.10	0.096	(0.215)	0.025	0.071
18 1.50	0.10	0.096	(0.214)	0.025	0.071
19 1.58	0.10	0.096	(0.213)	0.025	0.071
20 1.67	0.10	0.096	(0.212)	0.025	0.071
21 1.75	0.10	0.096	(0.212)	0.025	0.071
22 1.83	0.13	0.128	(0.211)	0.033	0.095
23 1.92	0.13	0.128	(0.210)	0.033	0.095
24 2.00	0.13	0.128	(0.209)	0.033	0.095
25 2.08	0.13	0.128	(0.208)	0.033	0.095
26 2.17	0.13	0.128	(0.207)	0.033	0.095
27 2.25	0.13	0.128	(0.207)	0.033	0.095
28 2.33	0.13	0.128	(0.206)	0.033	0.095
29 2.42	0.13	0.128	(0.205)	0.033	0.095
30 2.50	0.13	0.128	(0.204)	0.033	0.095
31 2.58	0.17	0.160	(0.203)	0.042	0.118
32 2.67	0.17	0.160	(0.202)	0.042	0.118
33 2.75	0.17	0.160	(0.202)	0.042	0.118
34 2.83	0.17	0.160	(0.201)	0.042	0.118
35 2.92	0.17	0.160	(0.200)	0.042	0.118
36 3.00	0.17	0.160	(0.199)	0.042	0.118
37 3.08	0.17	0.160	(0.198)	0.042	0.118
38 3.17	0.17	0.160	(0.197)	0.042	0.118
39 3.25	0.17	0.160	(0.197)	0.042	0.118
40 3.33	0.17	0.160	(0.196)	0.042	0.118
41 3.42	0.17	0.160	(0.195)	0.042	0.118
42 3.50	0.17	0.160	(0.194)	0.042	0.118

43	3.58	0.17	0.160	(0.193)	0.042	0.118
44	3.67	0.17	0.160	(0.192)	0.042	0.118
45	3.75	0.17	0.160	(0.192)	0.042	0.118
46	3.83	0.20	0.192	(0.191)	0.050	0.142
47	3.92	0.20	0.192	(0.190)	0.050	0.142
48	4.00	0.20	0.192	(0.189)	0.050	0.142
49	4.08	0.20	0.192	(0.188)	0.050	0.142
50	4.17	0.20	0.192	(0.188)	0.050	0.142
51	4.25	0.20	0.192	(0.187)	0.050	0.142
52	4.33	0.23	0.224	(0.186)	0.058	0.166
53	4.42	0.23	0.224	(0.185)	0.058	0.166
54	4.50	0.23	0.224	(0.184)	0.058	0.166
55	4.58	0.23	0.224	(0.184)	0.058	0.166
56	4.67	0.23	0.224	(0.183)	0.058	0.166
57	4.75	0.23	0.224	(0.182)	0.058	0.166
58	4.83	0.27	0.256	(0.181)	0.067	0.189
59	4.92	0.27	0.256	(0.181)	0.067	0.189
60	5.00	0.27	0.256	(0.180)	0.067	0.189
61	5.08	0.20	0.192	(0.179)	0.050	0.142
62	5.17	0.20	0.192	(0.178)	0.050	0.142
63	5.25	0.20	0.192	(0.177)	0.050	0.142
64	5.33	0.23	0.224	(0.177)	0.058	0.166
65	5.42	0.23	0.224	(0.176)	0.058	0.166
66	5.50	0.23	0.224	(0.175)	0.058	0.166
67	5.58	0.27	0.256	(0.174)	0.067	0.189
68	5.67	0.27	0.256	(0.174)	0.067	0.189
69	5.75	0.27	0.256	(0.173)	0.067	0.189
70	5.83	0.27	0.256	(0.172)	0.067	0.189
71	5.92	0.27	0.256	(0.171)	0.067	0.189
72	6.00	0.27	0.256	(0.171)	0.067	0.189
73	6.08	0.30	0.288	(0.170)	0.075	0.213
74	6.17	0.30	0.288	(0.169)	0.075	0.213
75	6.25	0.30	0.288	(0.168)	0.075	0.213
76	6.33	0.30	0.288	(0.167)	0.075	0.213
77	6.42	0.30	0.288	(0.167)	0.075	0.213
78	6.50	0.30	0.288	(0.166)	0.075	0.213
79	6.58	0.33	0.320	(0.165)	0.083	0.237
80	6.67	0.33	0.320	(0.165)	0.083	0.237
81	6.75	0.33	0.320	(0.164)	0.083	0.237
82	6.83	0.33	0.320	(0.163)	0.083	0.237
83	6.92	0.33	0.320	(0.162)	0.083	0.237
84	7.00	0.33	0.320	(0.162)	0.083	0.237
85	7.08	0.33	0.320	(0.161)	0.083	0.237
86	7.17	0.33	0.320	(0.160)	0.083	0.237
87	7.25	0.33	0.320	(0.159)	0.083	0.237
88	7.33	0.37	0.352	(0.159)	0.092	0.260
89	7.42	0.37	0.352	(0.158)	0.092	0.260
90	7.50	0.37	0.352	(0.157)	0.092	0.260
91	7.58	0.40	0.384	(0.156)	0.100	0.284
92	7.67	0.40	0.384	(0.156)	0.100	0.284
93	7.75	0.40	0.384	(0.155)	0.100	0.284
94	7.83	0.43	0.416	(0.154)	0.108	0.308
95	7.92	0.43	0.416	(0.154)	0.108	0.308
96	8.00	0.43	0.416	(0.153)	0.108	0.308
97	8.08	0.50	0.480	(0.152)	0.125	0.355
98	8.17	0.50	0.480	(0.151)	0.125	0.355
99	8.25	0.50	0.480	(0.151)	0.125	0.355
100	8.33	0.50	0.480	(0.150)	0.125	0.355
101	8.42	0.50	0.480	(0.149)	0.125	0.355
102	8.50	0.50	0.480	(0.149)	0.125	0.355
103	8.58	0.53	0.512	(0.148)	0.133	0.379
104	8.67	0.53	0.512	(0.147)	0.133	0.379
105	8.75	0.53	0.512	(0.147)	0.133	0.379
106	8.83	0.57	0.544	(0.146)	0.141	0.403
107	8.92	0.57	0.544	(0.145)	0.141	0.403
108	9.00	0.57	0.544	(0.144)	0.141	0.403
109	9.08	0.63	0.608	0.144	(0.158)	0.464
110	9.17	0.63	0.608	0.143	(0.158)	0.465
111	9.25	0.63	0.608	0.142	(0.158)	0.466
112	9.33	0.67	0.640	0.142	(0.166)	0.498
113	9.42	0.67	0.640	0.141	(0.166)	0.499
114	9.50	0.67	0.640	0.140	(0.166)	0.500
115	9.58	0.70	0.672	0.140	(0.175)	0.532

116	9.67	0.70	0.672	0.139	(0.175)	0.533
117	9.75	0.70	0.672	0.138	(0.175)	0.534
118	9.83	0.73	0.704	0.138	(0.183)	0.566
119	9.92	0.73	0.704	0.137	(0.183)	0.567
120	10.00	0.73	0.704	0.136	(0.183)	0.568
121	10.08	0.50	0.480	(0.136)	0.125	0.355
122	10.17	0.50	0.480	(0.135)	0.125	0.355
123	10.25	0.50	0.480	(0.134)	0.125	0.355
124	10.33	0.50	0.480	(0.134)	0.125	0.355
125	10.42	0.50	0.480	(0.133)	0.125	0.355
126	10.50	0.50	0.480	(0.132)	0.125	0.355
127	10.58	0.67	0.640	0.132	(0.166)	0.508
128	10.67	0.67	0.640	0.131	(0.166)	0.509
129	10.75	0.67	0.640	0.131	(0.166)	0.509
130	10.83	0.67	0.640	0.130	(0.166)	0.510
131	10.92	0.67	0.640	0.129	(0.166)	0.511
132	11.00	0.67	0.640	0.129	(0.166)	0.511
133	11.08	0.63	0.608	0.128	(0.158)	0.480
134	11.17	0.63	0.608	0.127	(0.158)	0.481
135	11.25	0.63	0.608	0.127	(0.158)	0.481
136	11.33	0.63	0.608	0.126	(0.158)	0.482
137	11.42	0.63	0.608	0.125	(0.158)	0.482
138	11.50	0.63	0.608	0.125	(0.158)	0.483
139	11.58	0.57	0.544	0.124	(0.141)	0.420
140	11.67	0.57	0.544	0.124	(0.141)	0.420
141	11.75	0.57	0.544	0.123	(0.141)	0.421
142	11.83	0.60	0.576	0.122	(0.150)	0.454
143	11.92	0.60	0.576	0.122	(0.150)	0.454
144	12.00	0.60	0.576	0.121	(0.150)	0.455
145	12.08	0.83	0.800	0.121	(0.208)	0.679
146	12.17	0.83	0.800	0.120	(0.208)	0.680
147	12.25	0.83	0.800	0.119	(0.208)	0.681
148	12.33	0.87	0.832	0.119	(0.216)	0.713
149	12.42	0.87	0.832	0.118	(0.216)	0.714
150	12.50	0.87	0.832	0.118	(0.216)	0.714
151	12.58	0.93	0.896	0.117	(0.233)	0.779
152	12.67	0.93	0.896	0.116	(0.233)	0.780
153	12.75	0.93	0.896	0.116	(0.233)	0.780
154	12.83	0.97	0.928	0.115	(0.241)	0.813
155	12.92	0.97	0.928	0.115	(0.241)	0.813
156	13.00	0.97	0.928	0.114	(0.241)	0.814
157	13.08	1.13	1.088	0.113	(0.283)	0.974
158	13.17	1.13	1.088	0.113	(0.283)	0.975
159	13.25	1.13	1.088	0.112	(0.283)	0.976
160	13.33	1.13	1.088	0.112	(0.283)	0.976
161	13.42	1.13	1.088	0.111	(0.283)	0.977
162	13.50	1.13	1.088	0.111	(0.283)	0.977
163	13.58	0.77	0.736	0.110	(0.191)	0.626
164	13.67	0.77	0.736	0.110	(0.191)	0.626
165	13.75	0.77	0.736	0.109	(0.191)	0.627
166	13.83	0.77	0.736	0.108	(0.191)	0.628
167	13.92	0.77	0.736	0.108	(0.191)	0.628
168	14.00	0.77	0.736	0.107	(0.191)	0.629
169	14.08	0.90	0.864	0.107	(0.225)	0.757
170	14.17	0.90	0.864	0.106	(0.225)	0.758
171	14.25	0.90	0.864	0.106	(0.225)	0.758
172	14.33	0.87	0.832	0.105	(0.216)	0.727
173	14.42	0.87	0.832	0.105	(0.216)	0.727
174	14.50	0.87	0.832	0.104	(0.216)	0.728
175	14.58	0.87	0.832	0.104	(0.216)	0.728
176	14.67	0.87	0.832	0.103	(0.216)	0.729
177	14.75	0.87	0.832	0.102	(0.216)	0.730
178	14.83	0.83	0.800	0.102	(0.208)	0.698
179	14.92	0.83	0.800	0.101	(0.208)	0.699
180	15.00	0.83	0.800	0.101	(0.208)	0.699
181	15.08	0.80	0.768	0.100	(0.200)	0.668
182	15.17	0.80	0.768	0.100	(0.200)	0.668
183	15.25	0.80	0.768	0.099	(0.200)	0.669
184	15.33	0.77	0.736	0.099	(0.191)	0.637
185	15.42	0.77	0.736	0.098	(0.191)	0.638
186	15.50	0.77	0.736	0.098	(0.191)	0.638
187	15.58	0.63	0.608	0.097	(0.158)	0.511
188	15.67	0.63	0.608	0.097	(0.158)	0.511

189	15.75	0.63	0.608	0.096	(0.158)	0.512
190	15.83	0.63	0.608	0.096	(0.158)	0.512
191	15.92	0.63	0.608	0.095	(0.158)	0.513
192	16.00	0.63	0.608	0.095	(0.158)	0.513
193	16.08	0.13	0.128	(0.094)	0.033	0.095
194	16.17	0.13	0.128	(0.094)	0.033	0.095
195	16.25	0.13	0.128	(0.093)	0.033	0.095
196	16.33	0.13	0.128	(0.093)	0.033	0.095
197	16.42	0.13	0.128	(0.092)	0.033	0.095
198	16.50	0.13	0.128	(0.092)	0.033	0.095
199	16.58	0.10	0.096	(0.092)	0.025	0.071
200	16.67	0.10	0.096	(0.091)	0.025	0.071
201	16.75	0.10	0.096	(0.091)	0.025	0.071
202	16.83	0.10	0.096	(0.090)	0.025	0.071
203	16.92	0.10	0.096	(0.090)	0.025	0.071
204	17.00	0.10	0.096	(0.089)	0.025	0.071
205	17.08	0.17	0.160	(0.089)	0.042	0.118
206	17.17	0.17	0.160	(0.088)	0.042	0.118
207	17.25	0.17	0.160	(0.088)	0.042	0.118
208	17.33	0.17	0.160	(0.087)	0.042	0.118
209	17.42	0.17	0.160	(0.087)	0.042	0.118
210	17.50	0.17	0.160	(0.087)	0.042	0.118
211	17.58	0.17	0.160	(0.086)	0.042	0.118
212	17.67	0.17	0.160	(0.086)	0.042	0.118
213	17.75	0.17	0.160	(0.085)	0.042	0.118
214	17.83	0.13	0.128	(0.085)	0.033	0.095
215	17.92	0.13	0.128	(0.084)	0.033	0.095
216	18.00	0.13	0.128	(0.084)	0.033	0.095
217	18.08	0.13	0.128	(0.084)	0.033	0.095
218	18.17	0.13	0.128	(0.083)	0.033	0.095
219	18.25	0.13	0.128	(0.083)	0.033	0.095
220	18.33	0.13	0.128	(0.082)	0.033	0.095
221	18.42	0.13	0.128	(0.082)	0.033	0.095
222	18.50	0.13	0.128	(0.082)	0.033	0.095
223	18.58	0.10	0.096	(0.081)	0.025	0.071
224	18.67	0.10	0.096	(0.081)	0.025	0.071
225	18.75	0.10	0.096	(0.080)	0.025	0.071
226	18.83	0.07	0.064	(0.080)	0.017	0.047
227	18.92	0.07	0.064	(0.080)	0.017	0.047
228	19.00	0.07	0.064	(0.079)	0.017	0.047
229	19.08	0.10	0.096	(0.079)	0.025	0.071
230	19.17	0.10	0.096	(0.079)	0.025	0.071
231	19.25	0.10	0.096	(0.078)	0.025	0.071
232	19.33	0.13	0.128	(0.078)	0.033	0.095
233	19.42	0.13	0.128	(0.077)	0.033	0.095
234	19.50	0.13	0.128	(0.077)	0.033	0.095
235	19.58	0.10	0.096	(0.077)	0.025	0.071
236	19.67	0.10	0.096	(0.076)	0.025	0.071
237	19.75	0.10	0.096	(0.076)	0.025	0.071
238	19.83	0.07	0.064	(0.076)	0.017	0.047
239	19.92	0.07	0.064	(0.075)	0.017	0.047
240	20.00	0.07	0.064	(0.075)	0.017	0.047
241	20.08	0.10	0.096	(0.075)	0.025	0.071
242	20.17	0.10	0.096	(0.074)	0.025	0.071
243	20.25	0.10	0.096	(0.074)	0.025	0.071
244	20.33	0.10	0.096	(0.074)	0.025	0.071
245	20.42	0.10	0.096	(0.073)	0.025	0.071
246	20.50	0.10	0.096	(0.073)	0.025	0.071
247	20.58	0.10	0.096	(0.073)	0.025	0.071
248	20.67	0.10	0.096	(0.072)	0.025	0.071
249	20.75	0.10	0.096	(0.072)	0.025	0.071
250	20.83	0.07	0.064	(0.072)	0.017	0.047
251	20.92	0.07	0.064	(0.072)	0.017	0.047
252	21.00	0.07	0.064	(0.071)	0.017	0.047
253	21.08	0.10	0.096	(0.071)	0.025	0.071
254	21.17	0.10	0.096	(0.071)	0.025	0.071
255	21.25	0.10	0.096	(0.070)	0.025	0.071
256	21.33	0.07	0.064	(0.070)	0.017	0.047
257	21.42	0.07	0.064	(0.070)	0.017	0.047
258	21.50	0.07	0.064	(0.070)	0.017	0.047
259	21.58	0.10	0.096	(0.069)	0.025	0.071
260	21.67	0.10	0.096	(0.069)	0.025	0.071
261	21.75	0.10	0.096	(0.069)	0.025	0.071

```
262  21.83     0.07      0.064       (  0.069)       0.017        0.047
263  21.92     0.07      0.064       (  0.068)       0.017        0.047
264  22.00     0.07      0.064       (  0.068)       0.017        0.047
265  22.08     0.10      0.096       (  0.068)       0.025        0.071
266  22.17     0.10      0.096       (  0.068)       0.025        0.071
267  22.25     0.10      0.096       (  0.068)       0.025        0.071
268  22.33     0.07      0.064       (  0.067)       0.017        0.047
269  22.42     0.07      0.064       (  0.067)       0.017        0.047
270  22.50     0.07      0.064       (  0.067)       0.017        0.047
271  22.58     0.07      0.064       (  0.067)       0.017        0.047
272  22.67     0.07      0.064       (  0.067)       0.017        0.047
273  22.75     0.07      0.064       (  0.066)       0.017        0.047
274  22.83     0.07      0.064       (  0.066)       0.017        0.047
275  22.92     0.07      0.064       (  0.066)       0.017        0.047
276  23.00     0.07      0.064       (  0.066)       0.017        0.047
277  23.08     0.07      0.064       (  0.066)       0.017        0.047
278  23.17     0.07      0.064       (  0.066)       0.017        0.047
279  23.25     0.07      0.064       (  0.065)       0.017        0.047
280  23.33     0.07      0.064       (  0.065)       0.017        0.047
281  23.42     0.07      0.064       (  0.065)       0.017        0.047
282  23.50     0.07      0.064       (  0.065)       0.017        0.047
283  23.58     0.07      0.064       (  0.065)       0.017        0.047
284  23.67     0.07      0.064       (  0.065)       0.017        0.047
285  23.75     0.07      0.064       (  0.065)       0.017        0.047
286  23.83     0.07      0.064       (  0.065)       0.017        0.047
287  23.92     0.07      0.064       (  0.065)       0.017        0.047
288  24.00     0.07      0.064       (  0.065)       0.017        0.047
              (Loss Rate Not Used)
    Sum =     100.0                                  Sum =    77.1
      Flood volume = Effective rainfall      6.42(In)
       times area      13.8(Ac.)/[(In)/(Ft.)] =       7.4(Ac.Ft)
      Total soil loss =      1.58(In)
      Total soil loss =     1.818(Ac.Ft)
      Total rainfall =      8.00(In)
      Flood volume =      322140.0 Cubic Feet
      Total soil loss =       79181.9 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =     13.613(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f     H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
 ------------------------------------------------------------------------
   0+ 5       0.0020      0.29  Q         |         |         |         |
   0+10       0.0060      0.58  VQ        |         |         |         |
   0+15       0.0103      0.63  VQ        |         |         |         |
   0+20       0.0159      0.81  VQ        |         |         |         |
   0+25       0.0224      0.95  VQ        |         |         |         |
   0+30       0.0292      0.98  VQ        |         |         |         |
   0+35       0.0360      0.99  VQ        |         |         |         |
   0+40       0.0428      0.99  VQ        |         |         |         |
   0+45       0.0496      0.99  VQ        |         |         |         |
   0+50       0.0574      1.14  V Q       |         |         |         |
   0+55       0.0662      1.28  V Q       |         |         |         |
   1+ 0       0.0752      1.31  V Q       |         |         |         |
   1+ 5       0.0833      1.17  V Q       |         |         |         |
   1+10       0.0904      1.03  V Q       |         |         |         |
   1+15       0.0973      1.00  V Q       |         |         |         |
   1+20       0.1041      0.99  VQ        |         |         |         |
   1+25       0.1110      0.99  VQ        |         |         |         |
   1+30       0.1178      0.99  VQ        |         |         |         |
   1+35       0.1246      0.99  VQ        |         |         |         |
   1+40       0.1314      0.99  VQ        |         |         |         |
   1+45       0.1382      0.99  VQ        |         |         |         |
   1+50       0.1461      1.14  V Q       |         |         |         |
   1+55       0.1549      1.28  V Q       |         |         |         |
   2+ 0       0.1639      1.31  V Q       |         |         |         |
   2+ 5       0.1730      1.32  V Q       |         |         |         |
```

```
2+10      0.1820      1.32  V Q       |         |         |         |
2+15      0.1911      1.32  |VQ       |         |         |         |
2+20      0.2002      1.32  |VQ       |         |         |         |
2+25      0.2093      1.32  |VQ       |         |         |         |
2+30      0.2184      1.32  |VQ       |         |         |         |
2+35      0.2285      1.47  |VQ       |         |         |         |
2+40      0.2396      1.61  |V Q      |         |         |         |
2+45      0.2508      1.64  |V Q      |         |         |         |
2+50      0.2622      1.65  |V Q      |         |         |         |
2+55      0.2736      1.65  |V Q      |         |         |         |
3+ 0      0.2849      1.65  |V Q      |         |         |         |
3+ 5      0.2963      1.65  |V Q      |         |         |         |
3+10      0.3077      1.65  |V Q      |         |         |         |
3+15      0.3190      1.65  |V Q      |         |         |         |
3+20      0.3304      1.65  |V Q      |         |         |         |
3+25      0.3417      1.65  |V Q      |         |         |         |
3+30      0.3531      1.65  |V Q      |         |         |         |
3+35      0.3645      1.65  |V Q      |         |         |         |
3+40      0.3758      1.65  | VQ      |         |         |         |
3+45      0.3872      1.65  | VQ      |         |         |         |
3+50      0.3996      1.80  | VQ      |         |         |         |
3+55      0.4129      1.94  | VQ      |         |         |         |
4+ 0      0.4265      1.97  | VQ      |         |         |         |
4+ 5      0.4401      1.98  | VQ      |         |         |         |
4+10      0.4537      1.98  | VQ      |         |         |         |
4+15      0.4674      1.98  | VQ      |         |         |         |
4+20      0.4820      2.13  | V Q     |         |         |         |
4+25      0.4976      2.27  | V Q     |         |         |         |
4+30      0.5134      2.30  | V Q     |         |         |         |
4+35      0.5294      2.31  | V Q     |         |         |         |
4+40      0.5453      2.31  | V Q     |         |         |         |
4+45      0.5612      2.31  |  VQ     |         |         |         |
4+50      0.5781      2.46  |  VQ     |         |         |         |
4+55      0.5960      2.60  |  V Q    |         |         |         |
5+ 0      0.6141      2.63  |  V Q    |         |         |         |
5+ 5      0.6302      2.35  |  VQ     |         |         |         |
5+10      0.6444      2.06  |  VQ     |         |         |         |
5+15      0.6583      2.01  |  VQ     |         |         |         |
5+20      0.6729      2.13  |  VQ     |         |         |         |
5+25      0.6885      2.27  |  VQ     |         |         |         |
5+30      0.7043      2.30  |  VQ     |         |         |         |
5+35      0.7213      2.46  |  VQ     |         |         |         |
5+40      0.7391      2.60  |  V Q    |         |         |         |
5+45      0.7572      2.63  |   VQ    |         |         |         |
5+50      0.7754      2.64  |   VQ    |         |         |         |
5+55      0.7936      2.64  |   VQ    |         |         |         |
6+ 0      0.8118      2.64  |   VQ    |         |         |         |
6+ 5      0.8310      2.79  |   VQ    |         |         |         |
6+10      0.8511      2.93  |   VQ    |         |         |         |
6+15      0.8715      2.96  |   VQ    |         |         |         |
6+20      0.8919      2.97  |   VQ    |         |         |         |
6+25      0.9124      2.97  |   VQ    |         |         |         |
6+30      0.9328      2.97  |    Q    |         |         |         |
6+35      0.9543      3.12  |    VQ   |         |         |         |
6+40      0.9767      3.26  |    VQ   |         |         |         |
6+45      0.9994      3.29  |    VQ   |         |         |         |
6+50      1.0221      3.30  |    VQ   |         |         |         |
6+55      1.0448      3.30  |    VQ   |         |         |         |
7+ 0      1.0676      3.30  |    VQ   |         |         |         |
7+ 5      1.0903      3.30  |    VQ   |         |         |         |
7+10      1.1130      3.30  |     Q   |         |         |         |
7+15      1.1357      3.30  |     Q   |         |         |         |
7+20      1.1595      3.45  |     Q   |         |         |         |
7+25      1.1842      3.59  |     VQ  |         |         |         |
7+30      1.2091      3.62  |     VQ  |         |         |         |
7+35      1.2351      3.78  |     VQ  |         |         |         |
7+40      1.2621      3.92  |     VQ  |         |         |         |
7+45      1.2893      3.95  |     VQ  |         |         |         |
7+50      1.3175      4.11  |      VQ |         |         |         |
7+55      1.3468      4.25  |      VQ |         |         |         |
8+ 0      1.3762      4.28  |      VQ |         |         |         |
8+ 5      1.4078      4.58  |      V Q|         |         |         |
8+10      1.4413      4.87  |      V Q|         |         |         |
```

```
  8+15       1.4752      4.92  |      V Q|         |         |         |
  8+20       1.5093      4.95  |       VQ|         |         |         |
  8+25       1.5434      4.95  |       VQ|         |         |         |
  8+30       1.5775      4.95  |       VQ|         |         |         |
  8+35       1.6126      5.10  |       V Q         |         |         |
  8+40       1.6486      5.24  |       V Q         |         |         |
  8+45       1.6849      5.27  |        VQ         |         |         |
  8+50       1.7223      5.43  |        VQ         |         |         |
  8+55       1.7606      5.57  |        V|Q        |         |         |
  9+ 0       1.7992      5.60  |        V|Q        |         |         |
  9+ 5       1.8404      5.99  |        V|Q        |         |         |
  9+10       1.8843      6.36  |         V Q       |         |         |
  9+15       1.9286      6.45  |         V Q       |         |         |
  9+20       1.9747      6.69  |         V  Q      |         |         |
  9+25       2.0221      6.89  |         V  Q      |         |         |
  9+30       2.0699      6.94  |          |V Q     |         |         |
  9+35       2.1192      7.16  |          |V  Q    |         |         |
  9+40       2.1700      7.36  |          |V  Q    |         |         |
  9+45       2.2210      7.41  |          | V Q    |         |         |
  9+50       2.2736      7.64  |          | V  Q   |         |         |
  9+55       2.3275      7.84  |          | V  Q   |         |         |
 10+ 0       2.3818      7.88  |          | V  Q   |         |         |
 10+ 5       2.4273      6.59  |          |  Q     |         |         |
 10+10       2.4639      5.32  |         Q  V      |         |         |
 10+15       2.4989      5.07  |         Q  V      |         |         |
 10+20       2.5329      4.95  |        Q|  V      |         |         |
 10+25       2.5670      4.95  |        Q|  V      |         |         |
 10+30       2.6011      4.95  |        Q|   V     |         |         |
 10+35       2.6417      5.90  |         |Q  V     |         |         |
 10+40       2.6887      6.82  |         |  QV     |         |         |
 10+45       2.7369      7.01  |         |   Q     |         |         |
 10+50       2.7858      7.10  |         |   QV    |         |         |
 10+55       2.8348      7.11  |         |   QV    |         |         |
 11+ 0       2.8838      7.12  |         |   QV    |         |         |
 11+ 5       2.9315      6.93  |         |  Q V    |         |         |
 11+10       2.9780      6.75  |         |  Q  V   |         |         |
 11+15       3.0243      6.72  |         |  Q  V   |         |         |
 11+20       3.0705      6.71  |         |  Q  V   |         |         |
 11+25       3.1167      6.72  |         |  Q  V   |         |         |
 11+30       3.1631      6.73  |         |  Q   V  |         |         |
 11+35       3.2067      6.34  |         | Q    V  |         |         |
 11+40       3.2478      5.96  |         |Q     V  |         |         |
 11+45       3.2884      5.90  |         |Q     V  |         |         |
 11+50       3.3302      6.07  |         | Q     V |         |         |
 11+55       3.3733      6.27  |         | Q     V |         |         |
 12+ 0       3.4168      6.31  |         | Q     V |         |         |
 12+ 5       3.4700      7.72  |         |    Q  V |         |         |
 12+10       3.5325      9.07  |         |       QV|         |         |
 12+15       3.5969      9.35  |         |       QV|         |         |
 12+20       3.6636      9.68  |         |        Q|         |         |
 12+25       3.7317      9.88  |         |        QV         |         |
 12+30       3.8001      9.93  |         |        QV         |         |
 12+35       3.8714     10.35  |         |         Q         |         |
 12+40       3.9454     10.74  |         |         |Q        |         |
 12+45       4.0200     10.83  |         |         |Q        |         |
 12+50       4.0962     11.07  |         |         | Q       |         |
 12+55       4.1738     11.27  |         |         | Q       |         |
 13+ 0       4.2518     11.32  |         |         | Q       |         |
 13+ 5       4.3367     12.33  |         |         |  VQ     |         |
 13+10       4.4283     13.30  |         |         |  V  Q   |         |
 13+15       4.5213     13.50  |         |         |   V Q   |         |
 13+20       4.6149     13.60  |         |         |   V  Q  |         |
 13+25       4.7086     13.61  |         |         |    V Q  |         |
 13+30       4.8024     13.61  |         |         |    V Q  |         |
 13+35       4.8812     11.45  |         |         | Q   V   |         |
 13+40       4.9456      9.35  |         |       Q |     V   |         |
 13+45       5.0071      8.93  |         |      Q  |      V  |         |
 13+50       5.0673      8.74  |         |      Q  |      V  |         |
 13+55       5.1275      8.75  |         |      Q  |      V  |         |
 14+ 0       5.1878      8.76  |         |      Q  |       V |         |
 14+ 5       5.2536      9.55  |         |        Q|       V |         |
 14+10       5.3247     10.33  |         |         Q       V |         |
 14+15       5.3970     10.49  |         |         Q        V|         |
```

```
14+20       5.4684     10.37  |          |          Q        V|          |
14+25       5.5386     10.19  |          |          Q        V|          |
14+30       5.6085     10.16  |          |          Q         V          |
14+35       5.6784     10.15  |          |          Q         V          |
14+40       5.7483     10.15  |          |          Q          |V         |
14+45       5.8183     10.16  |          |          Q          |V         |
14+50       5.8870      9.97  |          |         Q|          |V         |
14+55       5.9544      9.79  |          |         Q|          | V        |
15+ 0       6.0215      9.75  |          |         Q|          | V        |
15+ 5       6.0873      9.55  |          |         Q|          | V        |
15+10       6.1518      9.36  |          |        Q |          |  V       |
15+15       6.2160      9.33  |          |        Q |          |  V       |
15+20       6.2788      9.12  |          |        Q |          |  V       |
15+25       6.3404      8.94  |          |       Q  |          |   V      |
15+30       6.4017      8.91  |          |       Q  |          |   V      |
15+35       6.4575      8.10  |          |      Q   |          |   V      |
15+40       6.5081      7.34  |          |   Q      |          |    V     |
15+45       6.5577      7.20  |          |   Q      |          |    V     |
15+50       6.6068      7.13  |          |   Q      |          |    V     |
15+55       6.6560      7.14  |          |   Q      |          |     V    |
16+ 0       6.7052      7.15  |          |   Q      |          |     V    |
16+ 5       6.7366      4.56  |        Q |          |          |     V    |
16+10       6.7508      2.06  |    Q     |          |          |     V    |
16+15       6.7615      1.56  |  Q       |          |          |     V    |
16+20       6.7706      1.32  | Q        |          |          |     V    |
16+25       6.7797      1.32  | Q        |          |          |     V    |
16+30       6.7888      1.32  | Q        |          |          |     V    |
16+35       6.7969      1.17  | Q        |          |          |     V    |
16+40       6.8040      1.03  | Q        |          |          |     V    |
16+45       6.8109      1.00  | Q        |          |          |     V    |
16+50       6.8177      0.99  |Q         |          |          |     V    |
16+55       6.8245      0.99  |Q         |          |          |     V    |
17+ 0       6.8313      0.99  |Q         |          |          |     V    |
17+ 5       6.8402      1.28  | Q        |          |          |     V    |
17+10       6.8510      1.57  |  Q       |          |          |      V   |
17+15       6.8621      1.62  |  Q       |          |          |      V   |
17+20       6.8735      1.65  |  Q       |          |          |      V   |
17+25       6.8849      1.65  |  Q       |          |          |      V   |
17+30       6.8962      1.65  |  Q       |          |          |      V   |
17+35       6.9076      1.65  |  Q       |          |          |      V   |
17+40       6.9189      1.65  |  Q       |          |          |      V   |
17+45       6.9303      1.65  |  Q       |          |          |      V   |
17+50       6.9407      1.50  |  Q       |          |          |      V   |
17+55       6.9500      1.36  | Q        |          |          |      V   |
18+ 0       6.9592      1.33  | Q        |          |          |      V   |
18+ 5       6.9683      1.32  | Q        |          |          |      V   |
18+10       6.9774      1.32  | Q        |          |          |      V   |
18+15       6.9865      1.32  | Q        |          |          |      V   |
18+20       6.9956      1.32  | Q        |          |          |      V   |
18+25       7.0047      1.32  | Q        |          |          |      V   |
18+30       7.0138      1.32  | Q        |          |          |      V   |
18+35       7.0218      1.17  | Q        |          |          |      V   |
18+40       7.0290      1.03  | Q        |          |          |       V  |
18+45       7.0359      1.00  | Q        |          |          |       V  |
18+50       7.0417      0.84  |Q         |          |          |       V  |
18+55       7.0465      0.70  |Q         |          |          |       V  |
19+ 0       7.0511      0.67  |Q         |          |          |       V  |
19+ 5       7.0567      0.81  |Q         |          |          |       V  |
19+10       7.0632      0.95  |Q         |          |          |       V  |
19+15       7.0700      0.98  |Q         |          |          |       V  |
19+20       7.0778      1.14  | Q        |          |          |       V  |
19+25       7.0866      1.28  | Q        |          |          |       V  |
19+30       7.0956      1.31  | Q        |          |          |       V  |
19+35       7.1037      1.17  | Q        |          |          |       V  |
19+40       7.1108      1.03  | Q        |          |          |       V  |
19+45       7.1177      1.00  | Q        |          |          |       V  |
19+50       7.1235      0.84  |Q         |          |          |       V  |
19+55       7.1283      0.70  |Q         |          |          |       V  |
20+ 0       7.1330      0.67  |Q         |          |          |       V  |
20+ 5       7.1385      0.81  |Q         |          |          |       V  |
20+10       7.1450      0.95  |Q         |          |          |       V  |
20+15       7.1518      0.98  |Q         |          |          |       V  |
20+20       7.1586      0.99  |Q         |          |          |       V  |
```

```
   20+25       7.1654      0.99  |Q        |         |         |       V |
   20+30       7.1722      0.99  |Q        |         |         |       V |
   20+35       7.1790      0.99  |Q        |         |         |       V |
   20+40       7.1859      0.99  |Q        |         |         |       V |
   20+45       7.1927      0.99  |Q        |         |         |       V |
   20+50       7.1985      0.84  |Q        |         |         |       V |
   20+55       7.2033      0.70  |Q        |         |         |       V |
   21+ 0       7.2079      0.67  |Q        |         |         |       V |
   21+ 5       7.2135      0.81  |Q        |         |         |        V|
   21+10       7.2200      0.95  |Q        |         |         |        V|
   21+15       7.2268      0.98  |Q        |         |         |        V|
   21+20       7.2326      0.84  |Q        |         |         |        V|
   21+25       7.2374      0.70  |Q        |         |         |        V|
   21+30       7.2420      0.67  |Q        |         |         |        V|
   21+35       7.2476      0.81  |Q        |         |         |        V|
   21+40       7.2541      0.95  |Q        |         |         |        V|
   21+45       7.2608      0.98  |Q        |         |         |        V|
   21+50       7.2667      0.84  |Q        |         |         |        V|
   21+55       7.2715      0.70  |Q        |         |         |        V|
   22+ 0       7.2761      0.67  |Q        |         |         |        V|
   22+ 5       7.2817      0.81  |Q        |         |         |        V|
   22+10       7.2882      0.95  |Q        |         |         |        V|
   22+15       7.2949      0.98  |Q        |         |         |        V|
   22+20       7.3007      0.84  |Q        |         |         |        V|
   22+25       7.3056      0.70  |Q        |         |         |        V|
   22+30       7.3102      0.67  |Q        |         |         |        V|
   22+35       7.3148      0.66  |Q        |         |         |        V|
   22+40       7.3193      0.66  |Q        |         |         |        V|
   22+45       7.3239      0.66  |Q        |         |         |        V|
   22+50       7.3284      0.66  |Q        |         |         |        V|
   22+55       7.3329      0.66  |Q        |         |         |        V|
   23+ 0       7.3375      0.66  |Q        |         |         |        V|
   23+ 5       7.3420      0.66  |Q        |         |         |        V|
   23+10       7.3466      0.66  |Q        |         |         |        V|
   23+15       7.3511      0.66  |Q        |         |         |        V|
   23+20       7.3557      0.66  |Q        |         |         |        V|
   23+25       7.3602      0.66  |Q        |         |         |        V|
   23+30       7.3648      0.66  |Q        |         |         |        V|
   23+35       7.3693      0.66  |Q        |         |         |        V|
   23+40       7.3738      0.66  |Q        |         |         |        V|
   23+45       7.3784      0.66  |Q        |         |         |        V|
   23+50       7.3829      0.66  |Q        |         |         |        V|
   23+55       7.3875      0.66  |Q        |         |         |        V|
   24+ 0       7.3920      0.66  |Q        |         |         |        V|
   24+ 5       7.3946      0.37  Q         |         |         |        V|
   24+10       7.3951      0.08  Q         |         |         |        V|
   24+15       7.3953      0.03  Q         |         |         |        V|
-------------------------------------------------------------------------
```

SECTION 4 - Infiltration Testing

- **Infiltration Testing Results**

LGC Geotechnical, Inc.

PROJECT MEMORANDUM

To: Bedford Marketplace, LLC
5780 Fleet Street, Suite 225
Carlsbad, CA 92008

Date: December 4, 2019
Project No.: 19080-01

Attention: Mr. Glen Powles

From: Mr. Kevin Dyekman, CEG 2595 KAD

Subject: ***Updated Infiltration Testing for Proposed Water Quality Basin, Bedford Marketplace, Tracts 37030, 36294, and 37644, Corona, California***

References: Hunsaker & Associates, 2019, Conceptual Grading Plan, Bedford Market Place, dated October 14, 2019.

LGC Geotechnical, Inc. 2019, Preliminary Geotechnical Evaluation for Proposed Bedford Marketplace, Tracts 37030, 36294, and 37644, Corona, California, Project No. 19080-01, dated August 9, 2019.

In accordance with your requested, LGC Geotechnical, Inc. has prepared this memorandum in order summarize our updated infiltration testing for the proposed water quality basin, Bedford Marketplace, Tracts 37030, 36294, and 37644, located in Corona, California. The recent infiltration testing was performed in order to confirm the provisional design infiltration rate previously provided in our report dated August 9, 2019.

Based on previous nearby infiltration testing and knowledge of the site soils, a design infiltration rate of 2.0 inches per hour was previously provided for infiltration systems associated with Bedford Marketplace (LGC Geotechnical, 2019). Recent infiltration testing was performed within the location of the proposed water quality basin depicted on the Conceptual Grading Plan (Hunsaker, 2019) in order to confirm the previously provided infiltration rate. The estimation of infiltration rates was performed in general accordance with guidelines set forth by the County of Riverside. The recent infiltration test data is summarized in Table 1 on the following page.

January 27, 2015 Project No: 13208-01

Mr. John Sherwood
The New Home Company
85 Enterprise, Suite 450
Aliso Viejo, CA 92656

Subject: ***Summary of Field Infiltration Testing, Proposed Arantine Hills Residential Development, Tract No. 36294, City of Corona, California***

Introduction

In accordance with your request and authorization, LGC Geotechnical, Inc. has prepared this summary of field infiltration testing performed for the proposed basin located in the southeastern portion of the Arantine Hills Residential Development, Tract No. 36294 located in the City of Corona, California (Figure 1 – Site Location Map). The purpose of our study was to perform onsite infiltration testing as it relates to infiltration of future storm water.

Field Infiltration Testing

Field infiltration rate testing was performed in general accordance with guidelines set forth by the County of Riverside (2011). Two approximately 12-foot square areas were excavated to approximately 2 feet above basin design elevations in the northern and southern portions of the proposed infiltration basin (Figure 2 – Infiltration Testing Locations). Subsequent to excavating to the target elevation, three approximately 8 to 12-inch diameter test borings were hand excavated to approximate design basin elevations. The infiltration test borings were pre-soaked in accordance with the County guidelines. Based on the County of Riverside methodology, the tested field infiltration rates, summarized in Table 1, have normalized the three-dimensional flow that occurs within the field test to one-dimensional flow out of the bottom of the boring. The approximate locations of the field infiltration tests are shown on Figure 2 and the infiltration test data is attached.

TABLE 1

Summary of Field Infiltration Testing

Boring/Infiltration Location	Approx. Depth Below EG (ft)	Approx. Bottom of Infiltration Test Elevation (ft)	Infiltration Rate (in/hr)	
			Tested	Design*
I-1B	6	908	7.4	2.5
I-2B	6	908	27.7	9.2
I-3B	4	908	13.9	4.6

*Includes factor of safety of 3 from Tested Rate per Table 1 – Infiltration Testing Requirements, County of Riverside Guidelines (2011).

Groundwater

Groundwater was not encountered during the recent excavations for infiltration testing. Groundwater and seepage was also not encountered to the maximum explored depth of approximately 65 feet below existing grade during our previous subsurface evaluation (LGC, 2015a).

Seasonal fluctuations of groundwater elevations should be expected over time. In general, groundwater levels fluctuate with the seasons and local zones of perched groundwater may be present due to local seepage caused by irrigation and/or recent precipitation. Local perched groundwater conditions or surface seepage may develop once site development is completed.

Conclusions and Recommendations

The tested infiltration rates provided in the report are considered a general representation of the infiltration rates at the location of the proposed basin. It is our understanding that a preliminary infiltration rate of approximately 4.0 in/hr was utilized in the design of the proposed basin. It is our opinion that the infiltration rate used in the design adequately represents the site soils and is acceptable from a geotechnical viewpoint. In accordance with Appendix A of the Riverside County – Low Impact Development BMP Design Handbook, a minimum factor of safety of 3 has been applied to the tested rates in this report. It is the purview of the project civil engineer to determine which design infiltration rate should be used and if any additional factors of safety should be applied.

Please note, the testing of infiltration rates is highly dependent upon the materials encountered at the point of testing (i.e. location and depth of testing). Variations from our test results must be expected.

Limitations

Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable soils engineers and geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report.

It should be understood that LGC Geotechnical has relied on the accuracy of documents, verbal information, and other material and information provided by you and other associated parties in preparation of this report. LGC Geotechnical makes no warranties or guarantees as to the accuracy or completeness of information obtained from or compiled by others.

We appreciate this opportunity to be of service. Should you have any questions or concerns regarding this letter, please do not hesitate to contact our office.

Sincerely,

LGC Geotechnical, Inc.

Tim Lawson, CEG 1821, GE 2626
Geotechnical Engineer

Kevin Dyekman, CEG 2595
Project Geologist

KAD/TJL/aca

Attachments: References
Figure 1 – Site Location Map
Figure 2 – Infiltration Test Location Map
Field Infiltration Test Data

Distribution: (5) Addressee (4 wet-signed and 1 electronic)
(1) Hunsaker and Associates (via email)
Attn: Mr. Doug Staley
(1) CASC Engineering and Consulting (via email)
Attn: Mr. Glenn Budd

References

Allen, V., Connerton, A., and Carlson, C., 2011, Introduction to Infiltration Best Management Practices (BMP), Contech Construction Products, Inc., Professional Development Series, dated December 2011.

County of Riverside, 2011, Low Impact Developemnt BMP Design Handbook, Appendix A – Infiltration Testing, revised September 2011.

Hunsaker & Assoicates, 2015, 100-Scale Rough Grade Plans for Arantine Hills dated April 9, 2015.

LGC Geotechnical, Inc., 2014, Geotechnical Mass Grading Plan Review and Preliminary Geotechnical Recommendations for Proposed "Arantine" Residential Development, Tract 36294, City of Corona, California, Project No. 13208-01, dated August 7, 2014.

_____, 2015a, Preliminary Geotechnical Evaluation for Proposed Culvert Bridge Structure, "Arantine" Residential Development, Tract 36294, City of Corona, California, Project No. 13208-01, dated August 12, 2015.

_____, 2015b, Geotechnical Review of the Stockpile/Remedial Grading Plan, "Arantine Hills" Residential Development, Tract 36294, City of Corona, California, Project No. 13208-01, dated November 11, 2015.

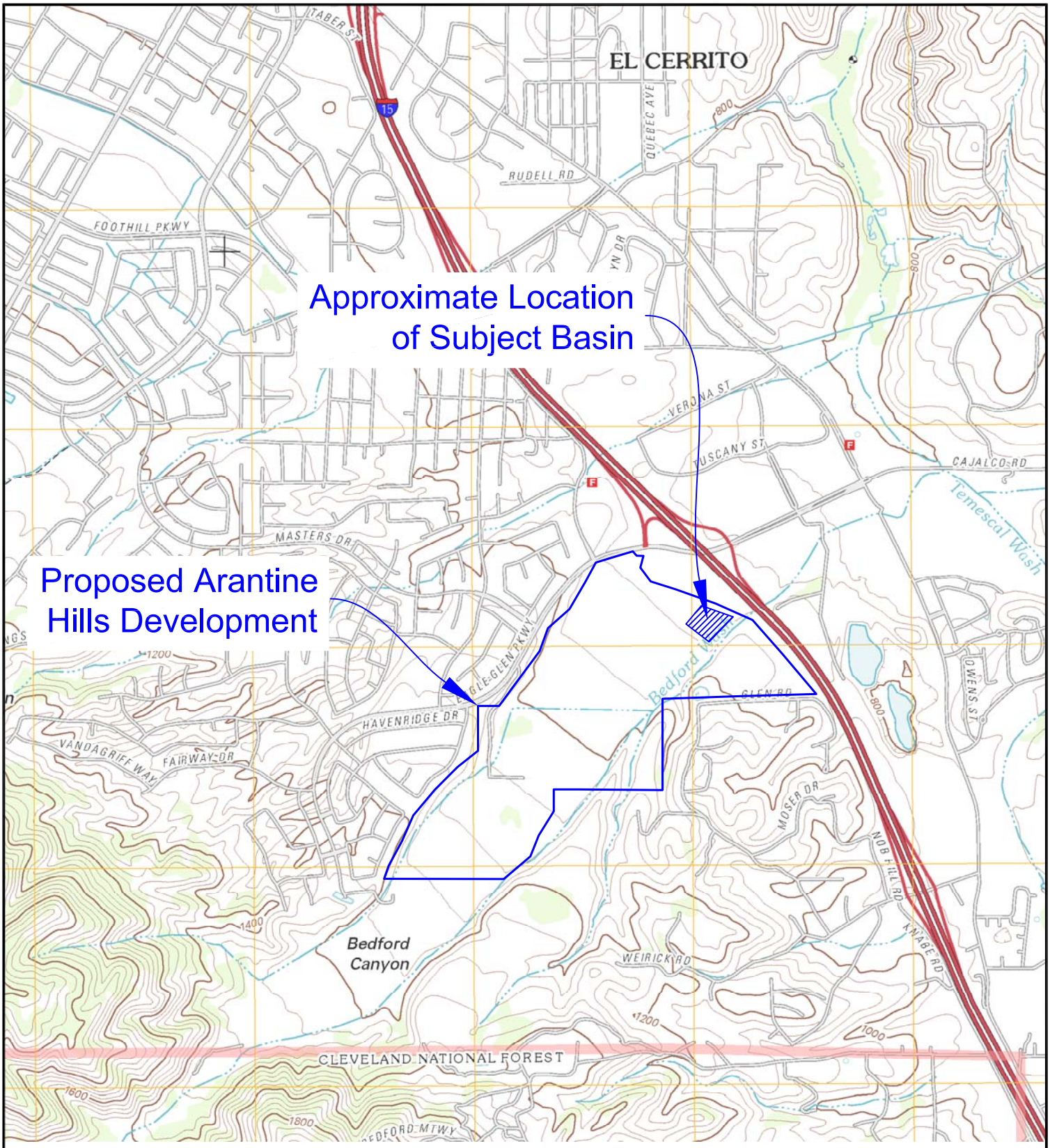
LOR Geotechnical Group, Inc., 2002, Preliminary Geotechnical Feasibility Investigation, 580 [sic] ± Acres, Bedford Canyon, Corona Area, Riverside County, California, Project No. 31558.1, dated March 25, 2002.

_____, 2003, Preliminary Update and Document Review of Seismic Hazards, 508 ± Acres, Bedford Canyon, Corona, California, Project No. 31558.3, dated February 5, 2003.

_____, 2004, Addendum Fault Investigation, 508 ± Acres, Arantine Hills, Corona, California, Project No. 31558.32, dated November 16, 2004.

_____, 2009, Arantine Hills Master Planned Community, City of Corona, Riverside County, California, Project No. 31558.14, dated October 15, 2009.

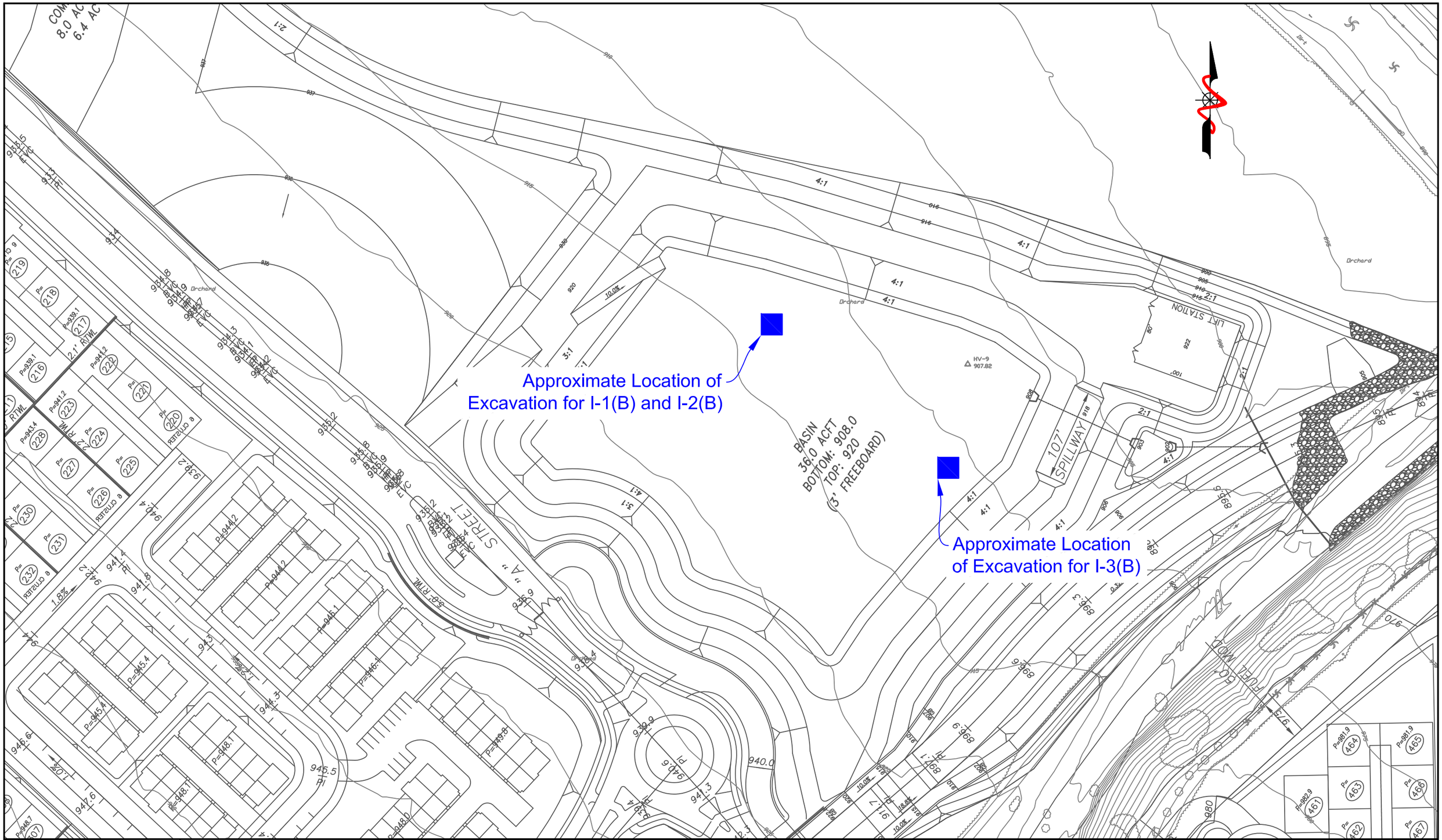
_____, 2010, Bedford Canyon Bluff Slope Failure Considerations as a Factor in the Baseline Sediment Yield and Transport Study, Arantine Hills Master Planned Community, City of Corona, Riverside County, California, Project No. 31558.92, dated March 9, 2010.



LGC Geotechnical, Inc.

FIGURE 1
Site Location Map

PROJECT NAME	Arantine Hills
PROJECT NO.	13208-01
ENG. / GEOL.	TJL / KAD
SCALE	1" = 2,000'
DATE	January 2016



LGC Geotechnical, Inc.
131 Calle Iglesia, Ste. 200
San Clemente, CA 92672
TEL (949) 369-6141 FAX (949) 369-6142

Figure 2 - Infiltration Testing Location Map

PROJECT NAME	Arantine Hills
PROJECT NO.	13208-01
ENG. / GEOL.	TJL / KAD
SCALE	1" = 100'
DATE	January 2016

Infiltration Test Data Sheet

LGC Geotechnical, Inc
131 Calle Iglesia Suite 200, San Clemente, CA 92672 tel. (949) 369-6141

Project Name: Arantine Hills
Project Number: 13208-01
Date: 1/21/2016
Boring Number: I-1(B)

Test hole dimensions (if circular)	
Boring Depth (feet)*:	2
Boring Diameter (inches):	9
Pipe Diameter (inches):	-

*measured at time of test

Test pit dimensions (if rectangular)	
Pit Depth (feet):	
Pit Length (feet):	
Pit Breadth (feet):	

*Pre-Test (Sandy Soil Criteria)**

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval (min)	Initial Depth to Water (feet)	Final Depth to Water (feet)	Total Change in Water Level (feet)	Greater Than or Equal to 0.5 feet (yes/no)
1	7:36	8:01	25.0	0.95	1.56	0.61	YES
2	8:03	8:28	25.0	0.88	1.54	0.66	YES

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight, and then obtain at least twelve measurements per hole over at least six hours (approximately 30 minute intervals) with a precision of at least 0.25 inches

Main Test Data

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval, Δt (min)	Initial Depth to Water, D_o (feet)	Final Depth to Water, D_f (feet)	Change in Water Level, ΔD (feet)	Tested Infiltration Rate (in/hr)
1	8:27	8:37	10.0	0.88	1.37	0.49	6.2
2	8:38	8:48	10.0	0.80	1.40	0.6	7.4
3	8:49	8:59	10.0	0.90	1.38	0.48	6.2
4	9:00	9:10	10.0	0.83	1.39	0.56	7.0
5	9:11	9:21	10.0	0.85	1.41	0.56	7.1
6	9:23	9:33	10.0	0.84	1.42	0.58	7.4
7							
8							
9							
10							
11							
12							
						Tested Infiltration Rate (not including a factor of safety)	**7.4**

Sketch:

Notes:

LGC Geotechnical, Inc.

Infiltration Test Data Sheet

LGC Geotechnical, Inc
131 Calle Iglesia Suite 200, San Clemente, CA 92672 tel. (949) 369-6141

Project Name: Arantine Hills
Project Number: 13208-01
Date: 1/21/2016
Boring Number: I-2(B)

Test hole dimensions (if circular)	
Boring Depth (feet)*:	2.5
Boring Diameter (inches):	10
Pipe Diameter (inches):	-

*measured at time of test

Test pit dimensions (if rectangular)	
Pit Depth (feet):	
Pit Length (feet):	
Pit Breadth (feet):	

*Pre-Test (Sandy Soil Criteria)**

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval (min)	Initial Depth to Water (feet)	Final Depth to Water (feet)	Total Change in Water Level (feet)	Greater Than or Equal to 0.5 feet (yes/no)
1	7:40	8:05	25.0	0.80	2.50	1.7	YES
2	8:10	8:35	25.0	0.95	2.50	1.55	YES

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight, and then obtain at least twelve

Main Test Data

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval, Δt (min)	Initial Depth to Water, D_o (feet)	Final Depth to Water, D_f (feet)	Change in Water Level, ΔD (feet)	Tested Infiltration Rate (in/hr)
1	10:30	10:40	10.0	1.55	2.50	0.95	20.9
2	10:41	10:44	3.0	1.40	2.02	0.62	31.1
3	10:45	10:48	3.0	1.37	2.00	0.63	30.8
4	10:49	10:52	3.0	1.40	1.97	0.57	27.9
5	10:54	10:57	3.0	1.39	2.01	0.62	30.7
6	10:59	11:02	3.0	1.44	1.99	0.55	27.7
7							
8							
9							
10							
11							
12							
						Tested Infiltration Rate (not including a factor of safety)	**27.7**

Sketch:

Notes:
All Water Swept Away During Pre-Test. Adjusted Observation Time in Order to Achieve More Accurate Rates. All Water Sweeps Away in Under 10 Minutes.

LGC Geotechnical, Inc.

Infiltration Test Data Sheet

LGC Geotechnical, Inc
131 Calle Iglesia Suite 200, San Clemente, CA 92672 tel. (949) 369-6141

Project Name: Arantine Hills
Project Number: 13208-01
Date: 1/21/2016
Boring Number: I-3(B)

Test hole dimensions (if circular)	
Boring Depth (feet)*:	1.8
Boring Diameter (inches):	12
Pipe Diameter (inches):	-

*measured at time of test

Test pit dimensions (if rectangular)	
Pit Depth (feet):	
Pit Length (feet):	
Pit Breadth (feet):	

*Pre-Test (Sandy Soil Criteria)**

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval (min)	Initial Depth to Water (feet)	Final Depth to Water (feet)	Total Change in Water Level (feet)	Greater Than or Equal to 0.5 feet (yes/no)
1	11:05	11:30	25.0	0.30	1.80	1.5	YES
2	11:30	11:55	25.0	0.46	1.80	1.34	YES

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight, and then obtain at least twelve

Main Test Data

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval, Δt (min)	Initial Depth to Water, D_o (feet)	Final Depth to Water, D_f (feet)	Change in Water Level, ΔD (feet)	Tested Infiltration Rate (in/hr)
1	11:56	12:06	10.0	0.55	1.80	1.25	25.7
2	12:07	12:12	5.0	0.40	0.95	0.55	14.4
3	12:13	12:18	5.0	0.55	1.00	0.45	12.7
4	12:21	12:26	5.0	0.60	0.98	0.38	10.9
5	12:27	12:32	5.0	0.44	0.97	0.53	14.2
6	12:33	12:38	5.0	0.45	0.95	0.5	13.3
7	12:39	12:44	5.0	0.44	0.96	0.52	13.9
8							
9							
10							
11							
12							
					Tested Infiltration Rate (not including a factor of safety)		**13.9**

Sketch:

Notes:
All Water Swept Away During Pre-Test. Adjusted Observation Time in Order to Achieve More Accurate Rates. All Water Sweeps Away in Under 10 Minutes.

LGC Geotechnical, Inc.

Table 1

Summary of Infiltration Testing December 3, 2019

Boring/Infiltration Location	Approx. Depth Below EG (ft)	Infiltration Rate (in/hr.)	
		Tested	Design*
I-1C	5	31.5	10.5
I-2C	4.8	3.2	1.1
I-3C	5	11.2	3.7

*Includes a minimum factor of safety of 3 from Tested Rate per Table 1 – Infiltration Testing Requirements, County of Riverside Guidelines (2011).

Based on the recent confirmational infiltration testing performed, a design infiltration rate of 2.0 inches per hour is considered suitable for use in the design of the proposed water quality basin.

It should be emphasized that infiltration test results are only representative of the location and depth where they are performed. Varying subsurface conditions may exist outside of the test locations which could alter the calculated infiltration rates indicated above. Infiltration tests are performed using relatively clean water free of particulates, silt, etc.

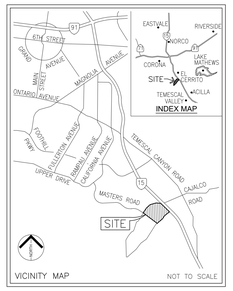
Should you have any questions regarding this memo, please do not hesitate to contact our office.

SECTION 5 - Hydrology Maps

- Existing Hydrology Map
- Proposed Hydrology Map

LEGEND

- MAJOR DRAINAGE BOUNDARY
- MINOR DRAINAGE BOUNDARY
- DRAINAGE COURSE FLOWLINE
- TRACT BOUNDARY
- B / C — SOILS GROUP AND BOUNDARY
- 403 / 1262 — NODE NUMBER / NODE ELEVATION
- D-9 / 5.08 — AREA DESIGNATION / AREA ACREAGE (IN ACRES)
- Q_{10} =40.5 cfs / Q_{100}=72.8 cfs / Tc=11.8 MIN. / INV=x — 10 YEAR STORM FLOW / 100 YEAR STORM FLOW / TIME OF CONCENTRATION (Q100) / INVERT ELEVATION
- ΣQ_{10} =40.5 cfs / ΣQ_{100}=72.8 cfs / Tc=11.8 MIN. / INV=x — 10 YEAR STORM FLOW CONFLUENCE / 100 YEAR STORM FLOW CONFLUENCE / TIME OF CONCENTRATION (Q100) / INVERT ELEVATION
- **AREA "B"** — AREA DESIGNATION
- LL — LONGEST LENGTH OF FLOW
- LC — LENGTH TO CENTROID
- CENTROID



INTERSTATE 15

CALTRANS R/W

202 / 895.0 — Q_{10} =14.7 cfs / Q_{100}=29.5 cfs / Tc=21.6 MIN.

L=1,091'

B-2 / 10.07

LL=1,928' Lc=884'

201 / 905.0 — Q_{10} =6.1 cfs / Q_{100}=12.0 cfs / Tc=14.9 MIN.

B-1 / 5.63

L=837'

200 / 910.0

EAGLE GLEN PARKWAY

TR 36294 LOT 8
SEE 2017 ANALYSIS FOR TR 36294
INCLUDED IN APPENDIX 4

LOT 8 TRACT 36294

LOT 9 TRACT 36294

LOT 10 TRACT 36294

LOT 11 TRACT 36294

LOT 12 TRACT 36294

LOT D TRACT 36294

LOT 12 ADJUSTMENT BOUNDARY PER BOUNDARY ADJUSTMENT NO. 0-0-0-0

LOT 12 ADJUSTMENT BOUNDARY PER BOUNDARY ADJUSTMENT NO. 0-0-0-0

BEDFORD CANYON ROAD

DWY 29

DWY 5

DWY 1

DWY 11

DWY 10

1" = 50'
25 0 50

PREPARED BY:
HUNSAKER & ASSOCIATES
IRVINE, INC
INLAND EMPIRE REGION
2900 ADAMS STREET, SUITE A-15
RIVERSIDE CA 92504 (951)352-7200
PLANNING/ENGINEERING/SURVEYING/GOVERNMENT RELATIONS

PRELIMINARY HYDROLOGY MAP
BEDFORD COMMERECIAL SITE
EXISTING CONDITION
TENTATIVE TRACT MAP 37788

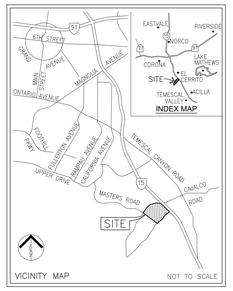
NOVEMBER 2019

PLOTTED ON: December 5, 2016

H:\00539\Engineering\Hydrology\Commercial Site\Plans\Map\00539-Commercial-Site-Hydr-Ex.dwg

LEGEND

- MAJOR DRAINAGE BOUNDARY
- MINOR DRAINAGE BOUNDARY
- DRAINAGE COURSE FLOWLINE
- TRACT BOUNDARY
- SOILS GROUP AND BOUNDARY
- NODE NUMBER
- NODE ELEVATION
- AREA DESIGNATION
- AREA ACREAGE (IN ACRES)
- Q_{10} =40.5 cfs / Q_{100}=72.8 cfs / Tc=11.8 MIN. / INV=x — 10 YEAR STORM FLOW / 100 YEAR STORM FLOW / TIME OF CONCENTRATION (Q100) / INVERT ELEVATION
- ΣQ_{10} =40.5 cfs / ΣQ_{100}=72.8 cfs / Tc=11.8 MIN. / INV=x — 10 YEAR STORM FLOW CONFLUENCE / 100 YEAR STORM FLOW CONFLUENCE / TIME OF CONCENTRATION (Q100) / INVERT ELEVATION
- **AREA "B"** — AREA DESIGNATION
- LL — LONGEST LENGTH OF FLOW
- LC — LENGTH TO CENTROID
- CENTROID



INTERSTATE 15

CALTRANS R/W

EAGLE GLEN PARKWAY / CAJALCO ROAD

BEDFORD CANYON ROAD

BASIN
TOP: 918 (4.6 AC.)
BOTTOM: 905 (3.0 AC.)
(2' FREEBOARD)
(79,979 CYS)

PAD ELEV.=924.0

FUTURE SCE SWITCH STATION

24' EMERGENCY ACCESS

BASIN/LIFT STATION ACCESS

LIFT STATION

PARCEL 6

LOT 8 TRACT 36666

LOT 9 TRACT 36666

LOT 10 TRACT 36666

LOT LINE ADJUSTMENT 15-001 REC'D 2/26/2016, DOC. #2016-0074775, RECDS. OF RIVCO.

P=930.7 | P=932.3 | P=926.4 | P=923.7 | P=922.4 | P=921.4 | P=922.6 | P=924.3 | P=927.0 | P=929.0 | P=925.9

100 933.0	101 929.7	102 927.2	103 929.5	104 927.2	105 924.7	106 926.8	107 924.7	108 921.5	109 923.1	110 921.5	111 913.5	112 908.4
201 926.8	202 923.0	203 923.2	204 920.7	205 920.8	206 919.7	207 926.5	208 924.0	209 921.5	210 922.5	211 921.6	212 918.5	213 921.5
214 918.7	215 916.8	216 922.5	217 920.1	218 917.8	219 917.8	220 916.8	221 895.0					

A-1 2.23	A-2 2.01	A-3 3.12	A-4 2.29	B-1 1.72	B-2 1.95	B-3 1.42	B-4 1.10	B-5 1.69	B-6 2.30	B-7 0.51	B-8 0.83	B-9 0.87
B-10 1.44												

Q_{10} =3.1 cfs, Q_{100}=5.0 cfs, Tc=9.0 MIN., INV=920.8
Q_{10} =4.1 cfs, Q_{100}=6.7 cfs, Tc=8.4 MIN., INV=923.0
Q_{10} =3.9 cfs, Q_{100}=6.3 cfs, Tc=7.5 MIN., INV=921.2
Q_{10} =2.2 cfs, Q_{100}=3.6 cfs, Tc=6.8 MIN., INV=920.0
Q_{10} =1.2 cfs, Q_{100}=1.9 cfs, Tc=5.0 MIN., INV=914.1
ΣQ_{10} =7.7 cfs, ΣQ_{100}=12.4 cfs, Tc=9.2 MIN., INV=921.0
ΣQ_{10} =12.8 cfs, ΣQ_{100}=20.9 cfs, Tc=10.0 MIN., INV=918.5
ΣQ_{10} =6.1 cfs, ΣQ_{100}=10.0 cfs, Tc=8.8 MIN., INV=917.0
ΣQ_{10} =8.6 cfs, ΣQ_{100}=14.0 cfs, Tc=9.4 MIN., INV=914.7
Q_{10} =3.5 cfs, Q_{100}=5.7 cfs, Tc=8.7 MIN., INV=917.3
Q_{10} =2.8 cfs, Q_{100}=4.5 cfs, Tc=7.4 MIN., INV=915.0
ΣQ_{10} =13.5 cfs, ΣQ_{100}=22.0 cfs, Tc=10.2 MIN., INV=911.3
ΣQ_{10} =17.3 cfs, ΣQ_{100}=28.2 cfs, Tc=10.4 MIN., INV=910.0
Q_{10} =3.3 cfs, Q_{100}=5.3 cfs, Tc=7.4 MIN., INV=915.6
Q_{10} =4.4 cfs, Q_{100}=7.1 cfs, Tc=7.8 MIN., INV=913.7
ΣQ_{10} =2.7 cfs, ΣQ_{100}=4.4 cfs, Tc=7.5 MIN., INV=911.8
Q_{10} =1.6 cfs, Q_{100}=2.6 cfs, Tc=7.5 MIN., INV=912.0
ΣQ_{10} =5.5 cfs, ΣQ_{100}=8.9 cfs, Tc=7.5 MIN., INV=915.5
Q_{10} =1.7 cfs, Q_{100}=2.7 cfs, Tc=7.6 MIN., INV=911.0
ΣQ_{10} =21.1 cfs, ΣQ_{100}=34.4 cfs, Tc=10.7 MIN., INV=908.3
ΣQ_{10} =23.4 cfs, ΣQ_{100}=38.2 cfs, Tc=10.8 Min.
Q_{10} =21.1 cfs, Q_{100}=34.4 cfs, Tc=10.7 MIN., INV=895.0
Q_{10} =4.0 cfs, Q_{100}=6.5 cfs, Tc=8.3 MIN., INV=915.5
ΣQ_{10} =16.6 cfs, ΣQ_{100}=27.1 cfs, Tc=10.8 MIN., INV=915.0
Q_{10} =16.6 cfs, Q_{100}=27.1 cfs, Tc=11.2 MIN., INV=913.5
Q_{10} =16.6 cfs, Q_{100}=27.1 cfs, Tc=11.1 MIN., INV=908.4

Lp=271' | L=247' | L=480' | L=414' | L=263' | L=437' | L=386' | L=1209' | L=203' | Lp=177' | Lp=126' | Lp=169' | Lp=140' | Lp=112' | Lp=335' | L=322' | Lp=315' | L=282' | Lp=247' | L=218' | Lp=15' | Lp=18' | Lp=20' | Lp=26' | Lp=242' | L=275' | Lp=18' | Lp=414' | Lp=10' | Lp=260' | Lp=382' | Lp=307' | Lp=22' | Lp=195' | Lp=62'

1% | 2% | 4% | 5% | 6% | 7% | 8% | 9% | 10% | 11% | 12% | 13% | 14% | 15% | 16% | 17% | 18% | 19% | 20% | 21% | 22% | 23% | 24% | 25% | 26% | 27% | 28% | 29% | 30% | 31% | 32% | 33% | 34% | 35% | 36% | 37% | 38% | 39% | 40% | 41% | 42% | 43% | 44% | 45% | 46% | 47% | 48% | 49% | 50%

2:1 | 4:1

900.0 TB

N E S W

1" = 50'
25 0 50

PREPARED BY:
HUNSAKER & ASSOCIATES
IRVINE, INC
INLAND EMPIRE REGION
2900 ADAMS STREET, SUITE A-15
RIVERSIDE CA 92504 (951)352-7200
PLANNING/ENGINEERING/SURVEYING/GOVERNMENT RELATIONS

PRELIMINARY HYDROLOGY MAP
BEDFORD COMMERECIAL SITE
PROPOSED DEVELOPMENT
TENTATIVE TRACT MAP 37788

NOVEMBER 2019

H:\30539\Engineering\Hydrology\Commercial Site\Plots\Maps\30539-Commercial Site-Hyd-Tr.dwg

PLOTTED ON: December 5, 2016

SECTION 6 - Reference Hydrology Reports

- **TRACT 36294 HYDROLOGY REPORT (Hunsaker & Assoc. April 2017) (Excerpts)**
- **C.A.S.C. MASTER DRAINAGE PLAN (DEC. 2015) (Excerpts)**

August 2017

HYDROLOGY STUDY

Arantine Hills
Tract 36294

City of Corona | County of Riverside

Volume 1 of 2

Prepared For:

Arantine Hills Holdings, LP

85 Enterprise
Suite 450
Aliso Viejo, CA 92656

949.382.2766

Prepared By:

HUNSAKER & ASSOCIATES IRVINE, INC.
Three Hughes, Irvine, CA 92618 | 949.583.1010

WO#: 2749-18 HydrolStdyTR36294 ArantineHills

HYDROLOGY STUDY

For

Arantine Hills Project
TRACT 36294

City of Corona

County of Riverside

California

August 2017

PREPARED BY: *Joanna Swiatkowska*

PREPARED UNDER THE SUPERVISION OF:

_____

Mohammed Rowther, R.C.E. 37127, Date Exp.: 6/30/18

TABLE OF CONTENTS

SECTION **TITLE**

1. DISCUSSION

- **A.** PROJECT SITE
- **B.** PURPOSE AND SCOPE
- **C.** LAND USE
- **D.** METHODOLOGY
- **E.** PRE-PROJECT CONDITION
- **F.** POST-PROJECT CONDITION
- **G.** CONCLUSIONS

2. EXISTING CONDITION

- SUMMARY OF EXISTING CONDITION FOR AREA A AND AREA B BASED ON HYDROLOGY STUDY PREPARED BY

CASC - MASTER DRAINAGE PLAN FOR TR 36294, DATED DEC. 2015,

3. PROPOSED CONDITION HYDROLOGY CALCULATIONS & MAP

- PROPOSED RATIONAL HYDROLOGY & MAPS
- PROPOSED UNIT HYDROGRAPHS & MAPS

4. BASIN ROUTING CALCULATIONS AND OUTLET STRUCTURE DESIGN

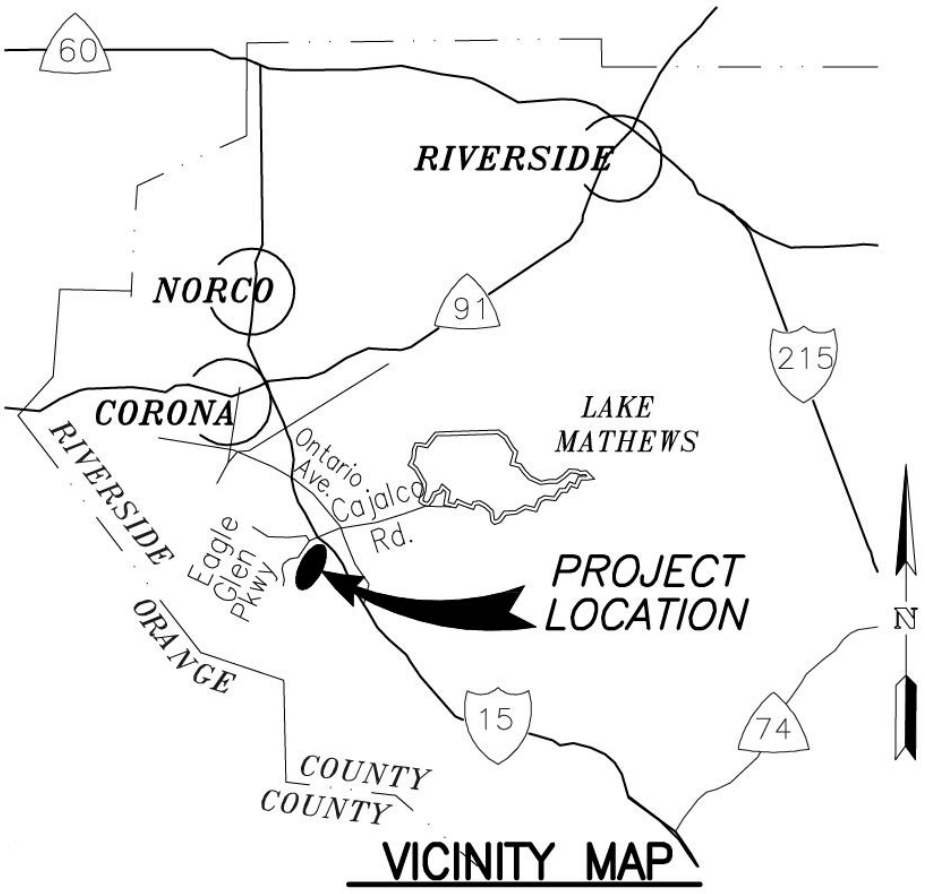
5. REFERENCES

- WATER QUALITY CALCULATION
- INFILTRATION REPORT
- HYDROLOGIC DATA
- TENTATIVE TRACT MAP
- **[EXCERPT]** EXISTING HYDROLOGY STUDY PER MASTER DRAINAGE PLAN FOR TR 36294, DEC. 2013, PREPARED BY CASC

SECTION 1
DISCUSSION

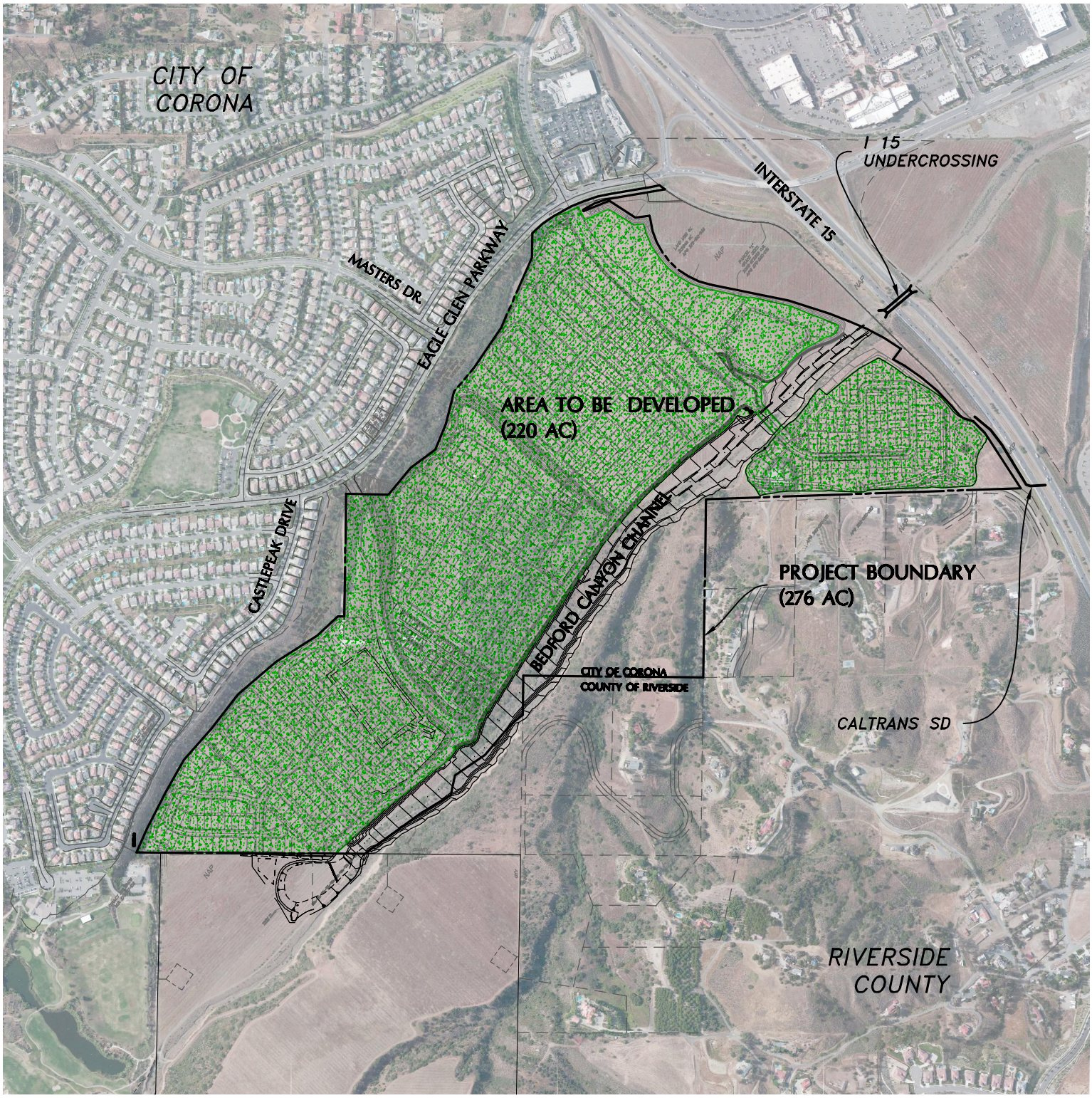
A. PROJECT SITE

The proposed Arantine Hills Project, Tentative Tract 36294 (Project) is located in the southeasterly portion of the City of Corona. The Project property is comprised of approximately 276 acres of undeveloped land lying to the south of Cajalco Rd / I-15 Freeway Interchange, as shown in the Vicinity Map below.



The Bedford Canyon Wash is a major regional watercourse, conveying runoff from an approximately 7.5 square mile watershed lying to the south, traverses through the Project site. The wash flows adjacent to a bluff that extends along the easterly portion of the Project in south to north direction, exiting the Project through an undercrossing structure in I-15 Freeway discharging to Temescal Canyon Creek.

Along with channelizing Bedford Canyon Wash flows in the proposed Bedford Canyon Channel (that will extend from a proposed levee along the southerly property line of the Project to the I-15 Undercrossing), the Project proposes to develop approximately 220 acres of the property into high, medium and low density residential, parks, and general commercial land uses; approximately 56 acres of the property will be within the footprint of the proposed Bedford Canyon Channel or will remain as natural open space, as shown on Exhibit 1.





LEGEND

PROJECT BOUNDARY

AREA TO BE DEVELOPED

FEET
0 500 1000 2000
0 1/2 1 2
INCHES

Exhibit 1

PROJECT SITE

F:\0853\Engineering\Hydrology\EXH1-PROJECT SITE.dwg

B. PURPOSE AND SCOPE

The purpose of this study is to investigate and evaluate the 100-year storm runoffs for post-project conditions and compare with pre-project conditions of the Arantine Hills Project, and to develop preliminary sizing of a drainage system that will provide flood protection from up to 100-year frequency storm events.

Hydrology study for existing condition of the Project site was analyzed in a report titled "*Master Drainage Plan for T*ract 36294- Mass Grading" dated Dec. 2015, prepared by CASC Engineering.

Runoff values for pre-project condition from the "Approved" hydrology study prepared by CASC have been used to evaluate the level of mitigation needed for the proposed development. This approved study has been included in Reference Section 5 of this report.

The scope of this study includes the following:

- Review of the available drainage report for the project site- "Master Drainage Plan for Tract 36294- Mass Grading".
- Prepar drainage area map and determine the points of discharge for proposed Project.
- Evaluated the storm runoffs for 2-, 5-, 10-, and 100-year storm events for 1, 3, 6, and 24-hour durations storm based on post- project condition.
- Determine preliminary sizing of BMPs and detention needed to mitigate water quality impact and increased runoff for 2-, 5-, 10-year storm events for 1, 3, 6, and 24-hour durations.
- Preliminary storm drain system pipe layout (sizing storm drain conduits and catch basins will be determined during final design phase of the project).

P.S. Evaluation of the proposed Bedford Canyon Channel and related improvements is not a part of this study.

C. LAND USE PLAN

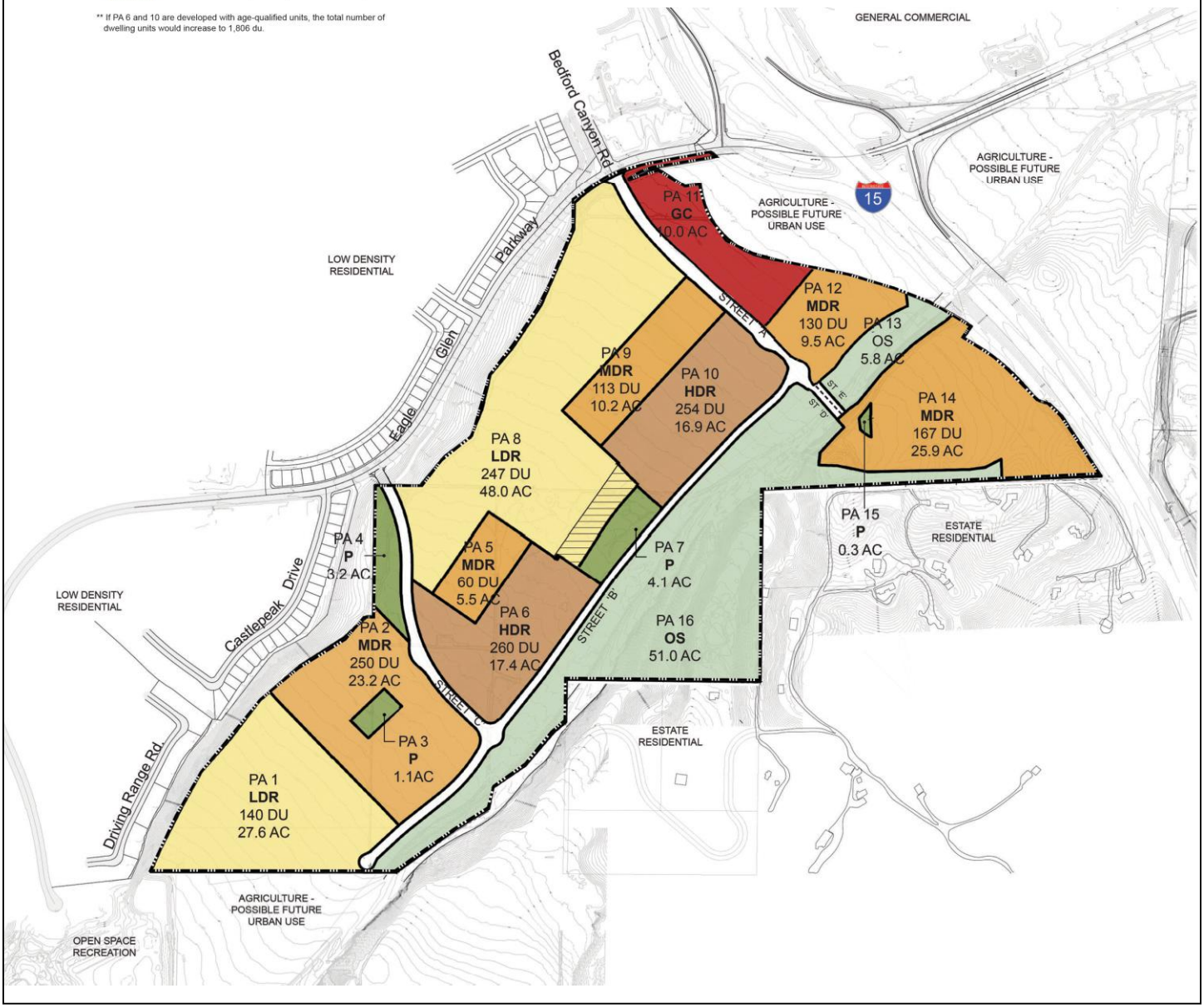
Land uses for proposed conditions are based Arantine Hills Specific Plan, dated October 2015, as shown on the Land Use Plan included in the following page.

Land Use	Acreage (AC)	Dwelling Units (DU)	Density Range
General Commercial (GC)	10.0		
High Density Residential (HDR)	34.3	514	15-36
Medium Density Residential (MDR)	74.3	720	6-15
Low Density Residential (LDR) *	75.6	387	3-6
Parks (P)	8.7		
Open Space (OS)	56.8		
Master Planned Roadways	16.3		
TOTAL	**276.0**	**1,621****	

Notes:

* Includes 2.6 acres of High Density Residential Overlay

** If PA 6 and 10 are developed with age-qualified units, the total number of dwelling units would increase to 1,806 du.



LSA

FIGURE 2.4

N

0 600 1200

FEET

Arantine Hills Specific Plan Amendment
Supplemental EIR

Proposed Arantine Hills Specific Plan Land Use Plan

SOURCE: Arantine Hills Specific Plan, October 2015.

I:\CCR1502\Reports\EIR\fig2-4_ProposedSPLU.cdr (10/09/15)

D. **METHODOLOGY**

The methodology used to for this hydrology study is based on Riverside County Hydrology Manual dated 1978. The hydrology and hydraulic software utilized are accepted by Riverside County Flood Control and Water Conservation District (District) which include the following:

Rational Method: Riverside County Rational Hydrology Program - CIVILCADD/ CIVILDESIGN Engineering Software by Bonadiman and Associates – Version 8.0.

Unit Hydrograph: Riverside County Synthetic Unit Hydrology Method - CIVILCADD/ CIVILDESIGN Engineering Software by Bonadiman and Associates – Version 8.2.

Basin Routing: Hydrograph Routing - CIVILCADD/ CIVILDESIGN Engineering Software by Bonadiman and Associates – Version 7.0.

Soils Types were based on soils map for Corona South, Plate C-1.27

The methodology used to design the treatment control BMP's and the project's drainage characteristic is based on the requirements set in the Riverside County Design Handbook for Low Impact Development Best Management Practices.

Proposed land use is based on 55 percent imperviousness for developed residential areas. Proposed land use for hillside areas was selected as open brush, poor cover.

Unit hydrographs were used to compare peak flows for the 2-year, 5-year, and 10-year storm events, for 1-, 3-, 6-, and 24-hour durations.

- Antecedent Moisture Condition (AMC) II was used to determine the peak storms and flood volumes for the 100-year and 10-year storm events per approved CASC's hydrology report..

E. PRE-PROJECT CONDITION

The Project site is comprised of two distinct drainage areas separated by the bluff that runs along the easterly edge of Bedford Canyon Wash. The two drainage areas are as follows:

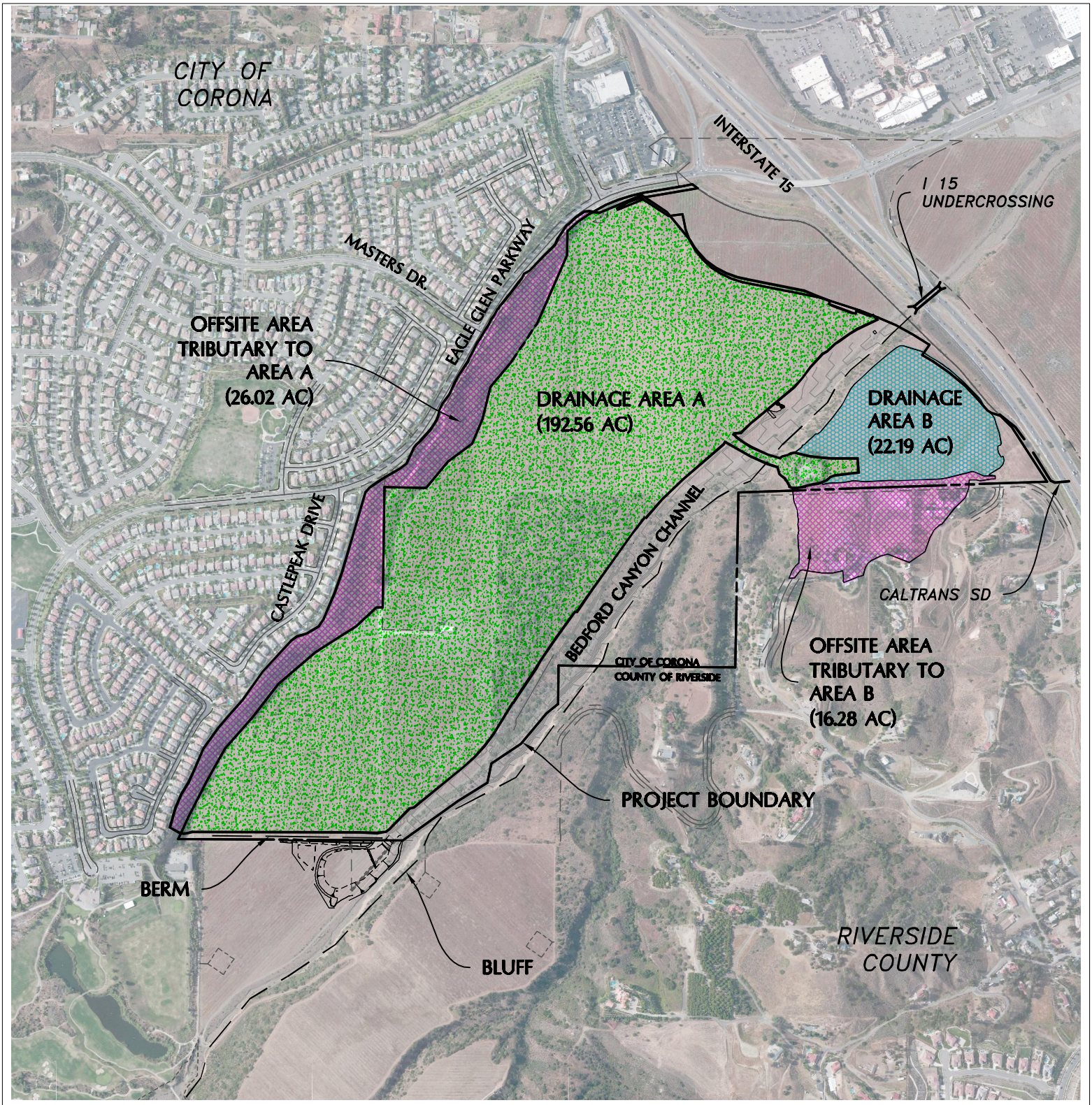
- Area A is low lying area that lies to the west of the bluff and is within the existing Bedford Canyon Wash. With the proposed construction of Bedford Canyon Channel and levee along the southerly property line of the Project, approximately 192.6 acres of the Project property lying to the west of the Bedford Canyon Channel will become developable (Area A) as shown in Exhibit 2. Area A is tributary to the Bedford Canyon Channel. Approximately 26 acres of offsite area that lies to the west of the Project drains through Area A to the Bedford Canyon Wash Channel.

- Area B is comprised of approximately 22 acres the lies to the east of the bluff and drains in a northeasterly direction a Caltrans' storm drain facility in I-15 Freeway. Approximately 16 acres of off-site area lying to the south of Area B drains through the Project.

F. POST-PROJECT CONDITION

Under post-project condition the discharge points for the two drainage areas, Area A and Area B, will remain similar to that under pre-project condition. Project area lying to the west of Bedford Canyon Channel will drain to the I-15 Undercrossing, and Project area lying to the east of the channel will drain to the existing storm drainage system along I-15 Freeway.

Area A: For the Project area lying to the west of Bedford Canyon Channel, runoff generated from off-site areas lying to the west of the Project will drain through Area A. All the storm flows in this Area A will be collected and conveyed via two proposed on-site storm drain system, and routed through a proposed detention basin "Basin A" located at the northeast corner of Area A, as shown in Exhibit 3.



LEGEND

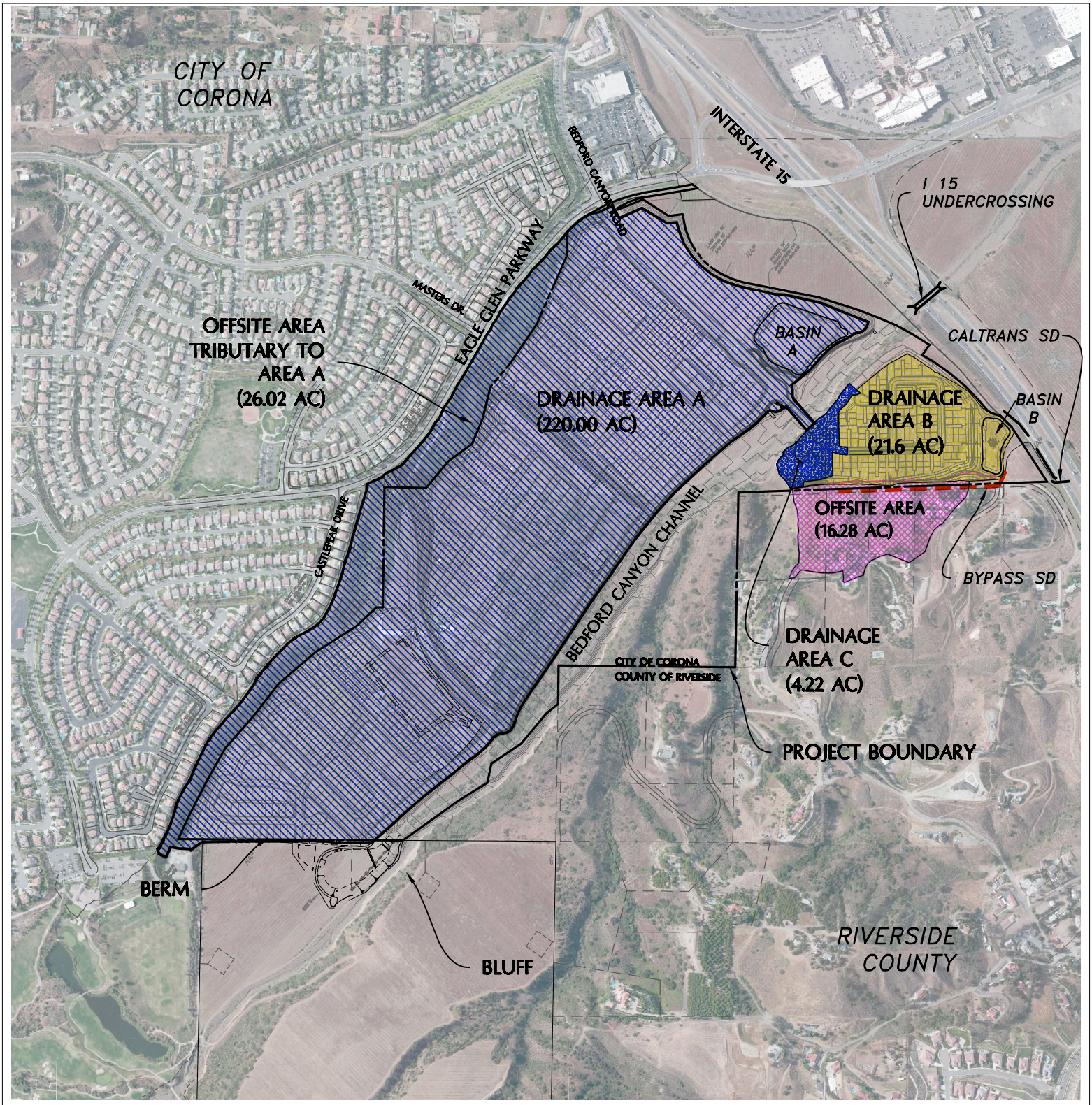
- PROJECT BOUNDARY
- MAJOR DRAINAGE BOUNDARY
- PROJECT AREA A - PER CASC MASTER DRAINAGE PLAN
- PROJECT AREA B - PER CASC MASTER DRAINAGE PLAN
- DRAINAGE OFFSITE AREA TRIBUTARY TO THE PROJECT SITE PER CASC MASTER DRAINAGE PLAN

FEET
0 500 1000 2000
0 1/2 1 2
INCHES

Exhibit 2

PRE-PROJECT CONDITION

F:\0853\Engineering\Hydrology\EXH2-EXISTING DRAINAGE.dwg



LEGEND

- PROJECT BOUNDARY
- MAJOR DRAINAGE BOUNDARY
- STORM DRAIN BYPASS FOR OFFSITE AREA
- AREA A TRIBUTARY TO BASIN A
- AREA B TRIBUTARY TO BASIN B
- AREA C TRIBUTARY TO BEDFORD CANYON CHANNEL
- OFFSITE AREA TRIBUTARY TO BYPASS SD.

FEET
0 500 1000 2000
0 1/2 1 2
INCHES

Exhibit 3

POST-PROJECT CONDITION

F:\0853\Engineering\Hydrology\EXH3-proposed DRAINAGE.dwg

With a total capacity of approximately 45 acre-feet, Basin A has been sized to mitigate both flood control and water quality impacts caused by proposed development within this drainage area. Basin A will function as an extended detention/infiltration basin for low flows and urban nuisance runoff, and will retard peak flow generated in Area A to less than the flow rates for pre-project conditions for 2, 5, 10 and 100-year storm events (as calculated in the approved CASC hydrology study).

Area **B**: Storm runoff from most of the Project area lying to the east of Bedford Canyon Channel will be collected and conveyed to a proposed flow-through detention Basin B via a proposed on-site storm drain system. Outflow from Basin B will be conveyed to the existing Caltrans' storm drain along I-15 Freeway. Runoff generated from the off-site areas (16.28 acres) lying to the south of the Area B will be routed directly to the existing I-15 storm drain via a separate storm drain.

With a total capacity of approximately 4.4 acre-feet, Basin B has been sized to mitigate both flood control and water quality impacts caused by proposed development within this drainage area. Basin B will include a water quality (sand filter) basin for low flows and urban nuisance runoff, and will retard peak flow generated in Area B to less than the flow rates for pre-project conditions for 2, 5, 10 and 100-year storm events (as calculated in the approved CASC hydrology study).

Area **C**: Due to the grades of the proposed roadway crossing over Bedford Canyon Channel, approximately 4 acres will drain westerly to the Bedford Canyon Channel. This area has been identified as Area C (4.22 Acres), as shown in Exhibit 3. Flows generated in Area C will be routed through a Modular Wetland Unit (MWU) prior to being discharged into the Bedford Canyon Channel.

G. CONCLUSION

Tables 1 and Table 2 summarize pre-project and post-project flows exiting the Project from Area A and Area B, respectively. Hydrologic conditions summarized include 2, 5, 10 and 100-year return frequency storms, with 1, 3, 6 and 24-hour durations. Flows generated in Area C have been combined with Area A for post-project conditions, since both of these areas will be tributary to the Bedford Canyon Channel, upstream of the I-15 Undercrossing

As shown in Tables 1 and 2, development impacts will be mitigated by proposed on-site detention, resulting in reducing post-project flow rates to less than pre-project flows under all the hydrological conditions evaluated, including the County's Hydromodification criteria by limiting post-project flows discharged from the Project to no greater than 110 percent of the pre-project flows for 2-year, 24-hour storm event.

Table 1 - SUMMARY OF AREA "A" AND AREA "C" FLOWS

DATE: 8/9/2017

STORM FREQUENCIES	DURATION	PEAK FLOW RATE (CFS)							
		PRE-PROJECT CONDITION AREA "A"		POST-PROJECT CONDITION					
				AREA "A"			AREA "C"		TOTAL TRIBUTARY TO BEDFORD CANYON CHANNEL ("A" + "C")
		RATIONAL METHOD	UNIT HYDROGRAPH	RATIONAL METHOD	UNIT HYDROGRAPH	DETENTION BASIN OUTFLOW	RATIONAL METHOD	UNIT HYDROGRAPH	
2-YR	1-HR	12.94		124.7	158.96	0.03	2.4		2.5
	3-HR		30.9		105.64	1.95		2.49	4.4
	6-HR		22.9		94.32	3.45		2.25	5.7
	24-HR		7.0		40.17	6.29		0.52	6.8
5-YR	1-HR	NO DATA		175.8	232.04	1.22	3.5		4.7
	3-HR		70.6		161.22	3.48		3.82	7.3
	6-HR		49.5		133.29	4.64		3.28	7.9
	24-HR		10.7		60.87	9.94		0.84	10.8
10-YR	1-HR	48.49		231.6	303.51	2.45	5.0		7.5
	3-HR		137.0		221.36	4.67		5.42	10.1
	6-HR		104.2		180.88	6.54		4.66	11.2
	24-HR		44.6		85.29	41.65		1.92	43.6
100-YR	1-HR	101.67		378.0	504.28	5.57	8.1		13.7
	3-HR		259.2		370.73	8.80		8.77	17.6
	6-HR		196.4		290.71	23.37		7.23	30.6
	24-HR		134.8		181.40	131.32		3.79	135.1
DRAINAGE AREA (ACRES)		218.56		220.0			4.22		224.22

Table 2 - SUMMARY OF AREA "B" FLOWS

STORM FREQUENCIES	DURATION	PEAK FLOW RATE (CFS)				
		PRE-PROJECT CONDITION		POST-PROJECT CONDITION		
		RATIONAL METHOD	UNIT HYDROGRAPH	RATIONAL METHOD	UNIT HYDROGRAPH	DETENTION BASIN OUTFLOW
2-YR	1-HR	**8.68**		16.8	18.72	**0.03**
	3-HR		**7.00**		13.20	**0.33**
	6-HR		**5.60**		11.87	**0.57**
	24-HR		**0.80**		4.30	**0.75**
5-YR	1-HR	NO DATA		23.8	27.13	**0.22**
	3-HR		**13.10**		19.51	**0.58**
	6-HR		**9.70**		16.71	**0.70**
	24-HR		**1.10**		6.52	**0.96**
10-YR	1-HR	**18.79**		31.5	35.65	**0.45**
	3-HR		**22.20**		26.33	**0.71**
	6-HR		**17.40**		22.44	**0.81**
	24-HR		**7.60**		10.43	**5.72**
100-YR	1-HR	**30.5**		50.7	57.22	**0.75**
	3-HR		**37.90**		42.35	**0.97**
	6-HR		**28.90**		34.68	**4.06**
	24-HR		**17.40**		20.04	**16.73**
DRAINAGE AREA (ACRES)		**22.19**		**21.6**		

SECTION 2

SUMMARY OF EXISTING HYDROLOGY FOR AREA A AND B

PREPARED BY

AEI-CASC ENGINEERING

EXISTING CONDITION BASED ON

"MASTER DRAINAGE PLANS FOR TR 36294" PREPARED BY CASC DATED DEC. 3, 2015

SUMMARY TABLE FOR AREA "A"

ACREAGE AREA "A" = 218.57 AC

EVENT		PEAK FLOW RATE (CFS)	
FREQ./DURATION		EXISTING CONDITION	
		Rational	Unit Hydrograph
2-YR	1-HR	12.94	55.6
	3-HR		30.9
	6-HR		22.9
	24-HR		7.0
5-YR	1-HR	no data	94.7
	3-HR		70.6
	6-HR		49.5
	24-HR		10.7
10-YR	1-HR	48.49	164.3
	3-HR		137.0
	6-HR		104.2
	24-HR		44.6
100-YR	1-HR	101.67	302.8
	3-HR		259.2
	6-HR		196.4
	24-HR		134.8

EXISTING CONDITION BASED ON

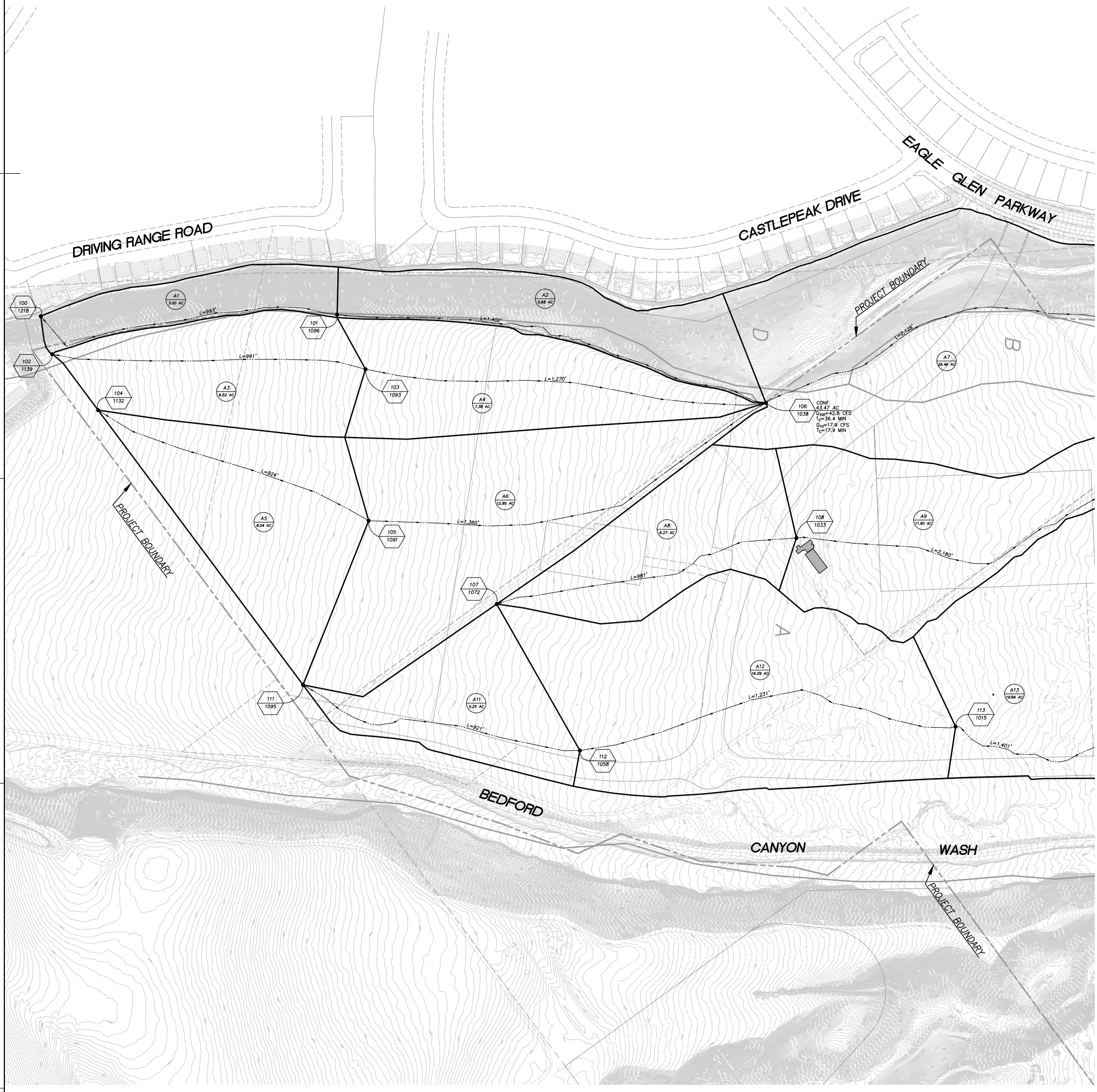
"MASTER DRAINAGE PLANS FOR TR 36294" PREPARED BY CASC DATED DEC. 3, 2015

SUMMARY TABLE FOR AREA "B"

ACREAGE AREA "B" = 22.17 AC, without off-site area

EVENT		PEAK FLOW RATE (CFS)
FREQ./DURATION		EXISTING CONDITION- UH
2-YR	1-HR	13.7
	3-HR	7.0
	6-HR	5.6
	24-HR	0.8
5-YR	1-HR	21.9
	3-HR	13.1
	6-HR	9.7
	24-HR	1.1
10-YR	1-HR	32.9
	3-HR	22.2
	6-HR	17.4
	24-HR	7.6
100-YR	1-HR	54.8
	3-HR	37.9
	6-HR	28.9
	24-HR	17.4

EXHIBIT “A”: HYDROLOGY MAP BASED ON EXISTING CONDITION
RATIONAL TABLING METHOD (SCALE: 1" = 100')



LEGEND:

- 112 / 1058 — NODE/CONCENTRATION POINT. FLOWLINE ELEVATION
- A3 / 3.11 AC — SUB AREA ACRES
- L=807' — FLOW DISTANCE
- FLOW PATH/DIRECTION
- WATERSHED SUB-AREA BOUNDARY
- IMPERVIOUS AREA
- A / D — HYDROLOGIC SOIL GROUP BOUNDARY

GRAPHIC SCALE
100 0 50 100 200
1" = 100'
CONTOUR INTERVAL=1'

EXHIBIT "A" SHEET 1 OF 2
HYDROLOGY MAP-RATIONAL METHOD
TTM NO. 36294-EXISTING CONDITION

CASC Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cei-casc.com

Drawing Name: G:\1346-0001-TTM67\Study Drainage\Hydrology Maps\EXHIBIT_A-RAT-EX_1.dwg
Last Opened: Jan 03, 2015 - 3:54pm by Julz

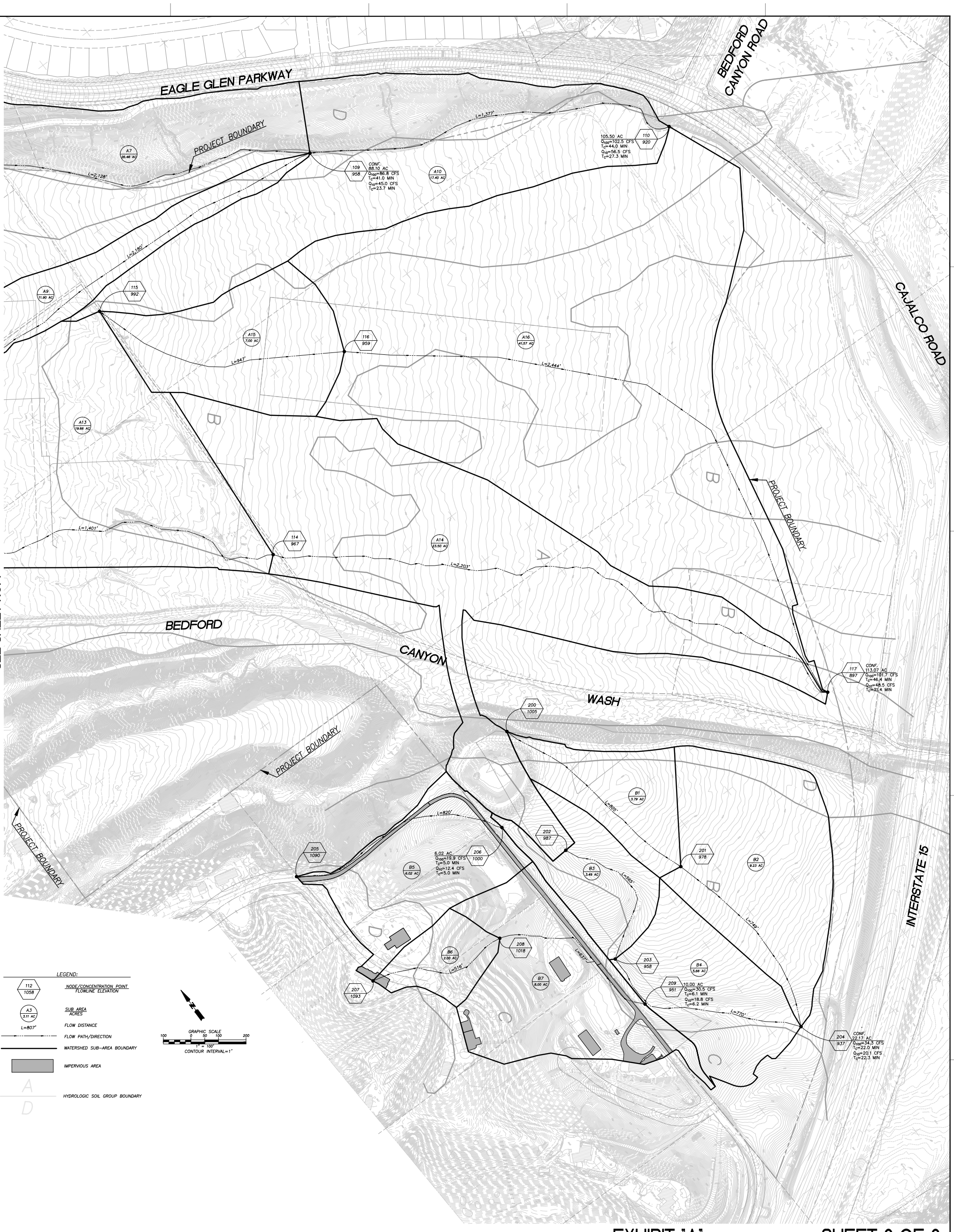


EXHIBIT "A" SHEET 2 OF 2

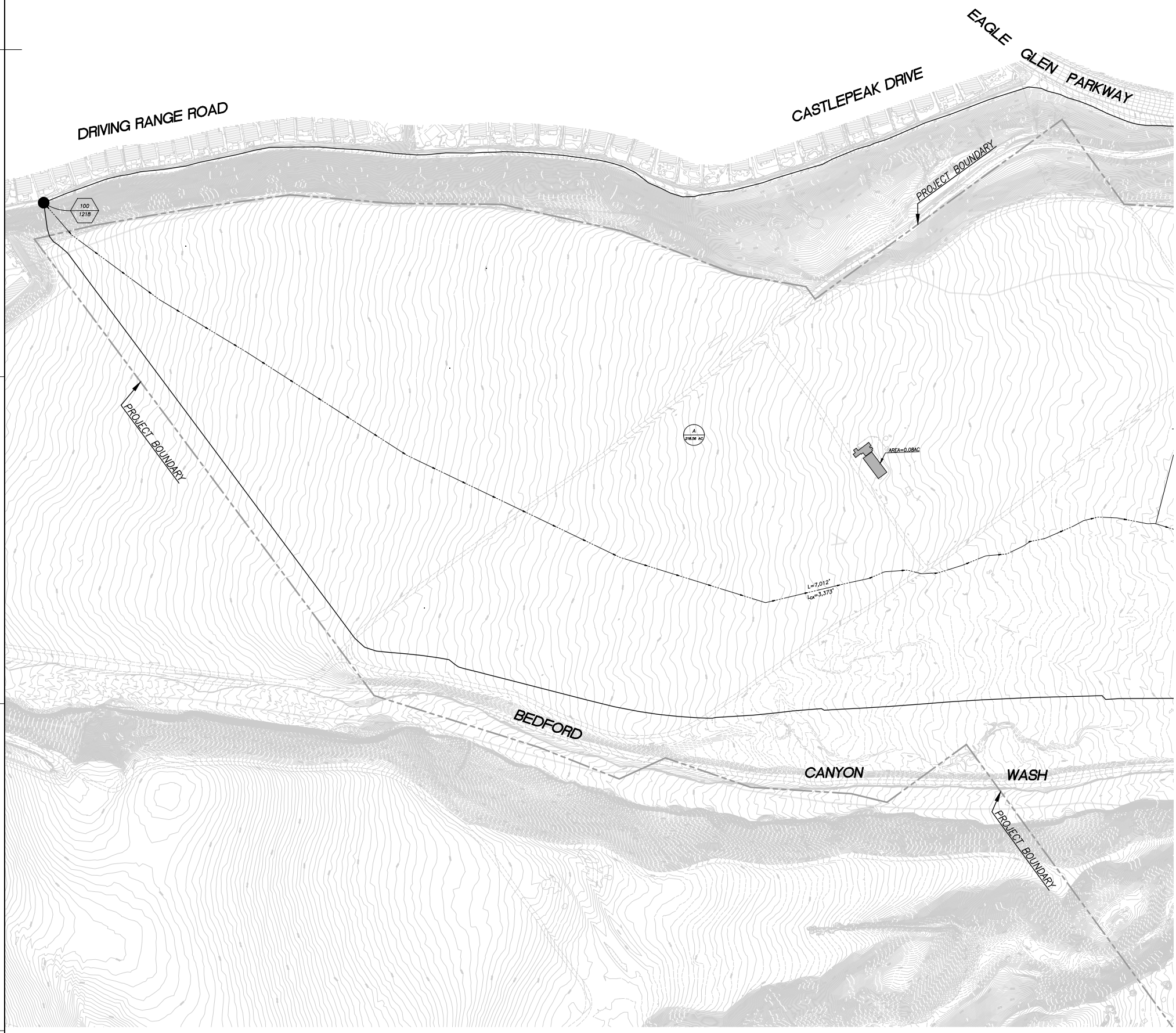
HYDROLOGY MAP-RATIONAL METHOD

TTM NO. 36294-EXISTING CONDITION

CASC Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cal-casc.com

Drawing Name: G:\1346-0000-Trails\SDrdp\Drainage\Hydrology Maps\EXHIBIT_A-RATIONAL_EX_2.dwg
Last Opened: Jan 03, 2015 - 3:05pm by jruiz

EXHIBIT “C”: HYDROLOGY MAP BASED ON EXISTING CONDITION
HYDROGRAPH METHOD (SCALE: 1" = 100')



HYDROLOGY DATA

AREA DESIGNATION		A		B	
NODAL POINT		100-101		200-201	
AREA SIZE (AC)		218.56		22.17	
		FLOW (CFS)	VOLUME (AC-FT)	FLOW (CFS)	VOLUME (AC-FT)
2-YR	1-HR	55.6	2.4	13.7	0.3
	3-HR	30.9	2.4	7.0	0.3
	6-HR	22.9	2.9	5.6	0.3
	24-HR	**7.0**	**4.6**	**0.8**	**0.5**
5-YR	1-HR	94.7	4.0	21.9	0.5
	3-HR	70.6	4.6	13.1	0.6
	6-HR	49.5	4.5	9.7	0.6
	24-HR	**10.7**	**6.9**	**1.1**	**0.7**
10-YR	1-HR	164.3	7.6	32.9	1.0
	3-HR	137.0	8.8	22.2	1.2
	6-HR	104.2	8.5	17.4	1.2
	24-HR	**44.6**	**12.6**	**7.6**	**2.0**
100-YR	1-HR	302.8	16.2	54.8	1.9
	3-HR	259.2	19.8	37.9	2.5
	6-HR	196.4	18.1	28.9	2.3
	24-HR	**134.8**	**43.7**	**17.4**	**5.9**

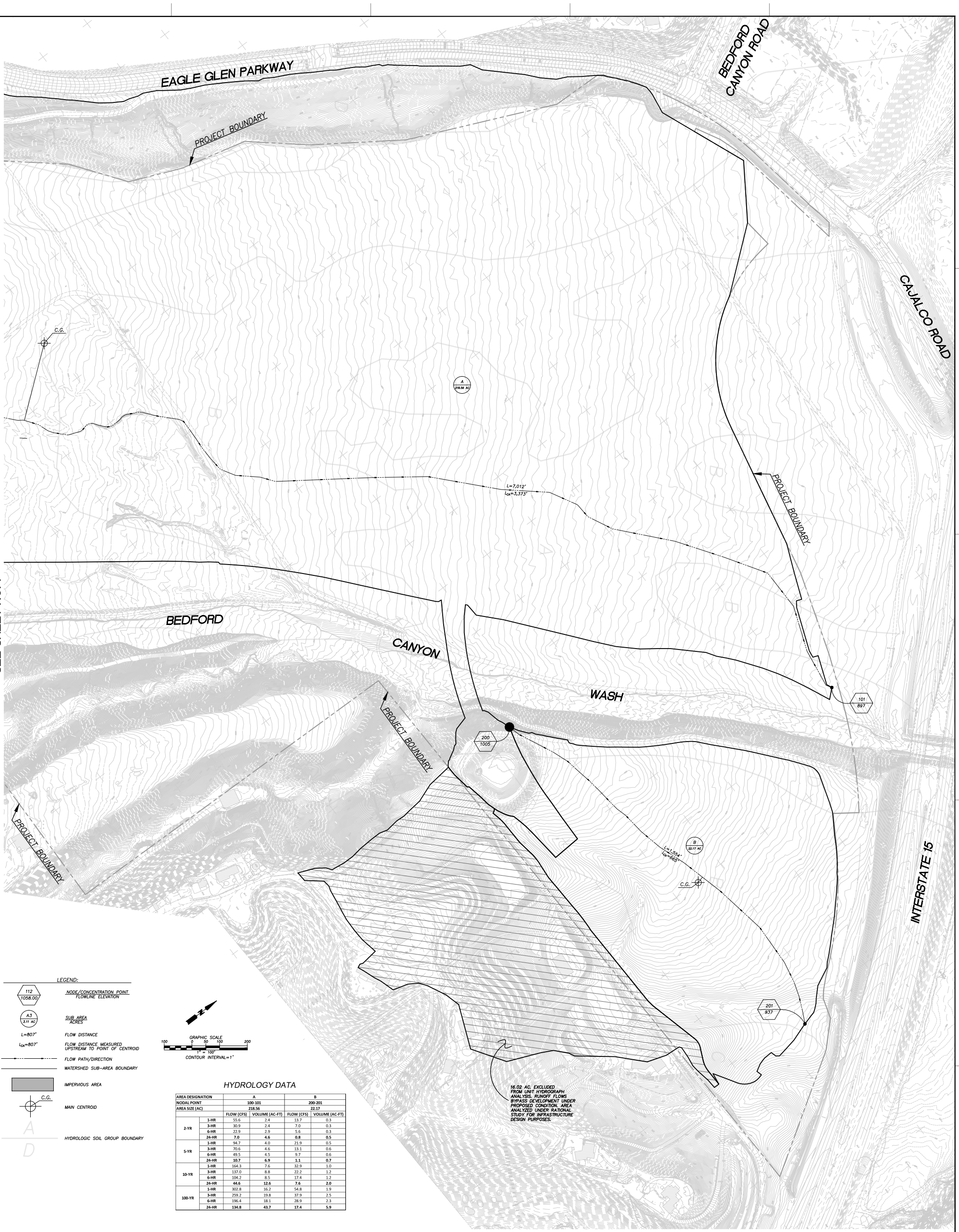
LEGEND:

- 112 / 1058.00 — NODE/CONCENTRATION POINT / FLOWLINE ELEVATION
- A / 3.11 AC — SUB AREA / ACRES
- L=807' — FLOW DISTANCE
- L_{CA}=807' — FLOW DISTANCE MEASURED UPSTREAM TO POINT OF CENTROID
- FLOW PATH/DIRECTION
- WATERSHED SUB-AREA BOUNDARY
- IMPERVIOUS AREA
- C.G. — MAIN CENTROID
- A / D — HYDROLOGIC SOIL GROUP BOUNDARY

GRAPHIC SCALE
100 0 50 100 200
1" = 100'
CONTOUR INTERVAL=1'

CASC Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cei-casc.com

EXHIBIT "C" SHEET 1 OF 2
HYDROLOGY MAP-HYDROGRAPH METHOD
TTM NO. 36294-EXISTING CONDITION



LEGEND:

- 112 / 1058.00 — NODE/CONCENTRATION POINT / FLOWLINE ELEVATION
- A3 / 3.11 AC — SUB AREA / ACRES
- L=807' — FLOW DISTANCE
- L_{CA}=807' — FLOW DISTANCE MEASURED UPSTREAM TO POINT OF CENTROID
- FLOW PATH/DIRECTION
- WATERSHED SUB-AREA BOUNDARY
- IMPERVIOUS AREA
- C.G. — MAIN CENTROID
- A / D — HYDROLOGIC SOIL GROUP BOUNDARY

N

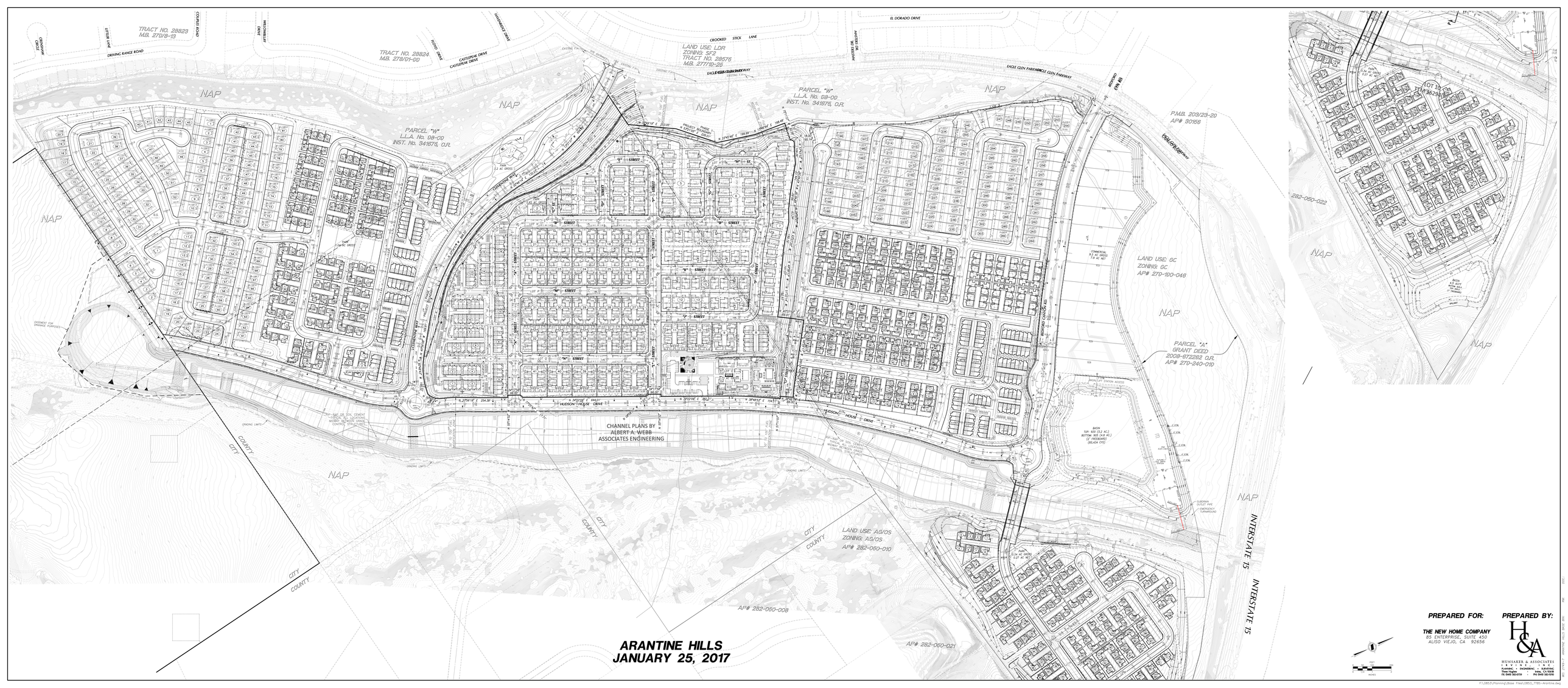
GRAPHIC SCALE
100 0 50 100 200
1" = 100'
CONTOUR INTERVAL=1'

HYDROLOGY DATA

AREA DESIGNATION		A		B	
NODAL POINT		100-101		200-201	
AREA SIZE (AC)		218.56		22.17	
		FLOW (CFS)	VOLUME (AC-FT)	FLOW (CFS)	VOLUME (AC-FT)
2-YR	1-HR	55.6	2.4	13.7	0.3
	3-HR	30.9	2.4	7.0	0.3
	6-HR	22.9	2.9	5.6	0.3
	24-HR	**7.0**	**4.6**	**0.8**	**0.5**
5-YR	1-HR	94.7	4.0	21.9	0.5
	3-HR	70.6	4.6	13.1	0.6
	6-HR	49.5	4.5	9.7	0.6
	24-HR	**10.7**	**6.9**	**1.1**	**0.7**
10-YR	1-HR	164.3	7.6	32.9	1.0
	3-HR	137.0	8.8	22.2	1.2
	6-HR	104.2	8.5	17.4	1.2
	24-HR	**44.6**	**12.6**	**7.6**	**2.0**
100-YR	1-HR	302.8	16.2	54.8	1.9
	3-HR	259.2	19.8	37.9	2.5
	6-HR	196.4	18.1	28.9	2.3
	24-HR	**134.8**	**43.7**	**17.4**	**5.9**

CASC Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cal-casc.com

EXHIBIT "C" SHEET 2 OF 2
HYDROLOGY MAP-HYDROGRAPH METHOD
TTM NO. 36294-EXISTING CONDITION


TRACT NO. 28823
M.B. 270/8-13
TRACT NO. 28824
M.B. 278/01-00
LAND USE: LDR
ZONING: SF2
TRACT NO. 28576
M.B. 277/10-22
PARCEL "W"
L.L.A. No. 08-00
INST. No. 341676, O.R.
P.M.B. 203/23-20
AP# 301-58
LAND USE: GC
ZONING: GC
AP# 270-100-046
PARCEL "A"
GRANT DEED
2009-0172262 O.R.
AP# 270-240-010
LAND USE: AG/OS
ZONING: AG/OS
AP# 282-060-010
AP# 282-060-008
AP# 282-060-021
282-060-022
CHANNEL PLANS BY
ALBERT A. WEBB
ASSOCIATES ENGINEERING
INTERSTATE 15
NAP
CITY
COUNTY
DRIVING RANGE ROAD
CROMWAY CIRCLE
LITTLER LANE
COORS ROAD
WESTONHILL DRIVE
FLOYD DRIVE
CASTLEPEAK DRIVE
HUNTINGDALE DRIVE
CROOKED STICK LANE
MUIRFIELD DR.
EL DORADO DRIVE
EAGLE GLEN PARKWAY
HIDDEN CANYON RD.
HUDSON HOUSE DRIVE
CLUBHOUSE DRIVE
"A" STREET
"B" STREET
"C" STREET
"D" STREET
"E" STREET
"F" STREET
"G" STREET
"H" STREET
"J" STREET
"K" STREET
"L" STREET
"M" STREET
"N" STREET
"P" STREET
"Q" STREET
"R" STREET
"S" STREET
"T" STREET
"U" STREET
"V" STREET
"W" STREET
"X" STREET
"Y" STREET
"Z" STREET
BASIN
TOP: 920 (12 AC.)
BOTTOM: 905 (4.8 AC.)
(7' HATCHARD)
(BLACK SITE)
PARK
3.24 AC. NET
3.27 AC. GROSS
COMMERCIAL
9.2 AC. GROSS
7.9 AC. NET
EASEMENT FOR DRAINAGE PURPOSES
SUBDRAIN OUTLET PIPE
EMERGENCY TURNAROUND
PROJECT BOUNDARY
EXISTING TANK
EXISTING WATER LINE
EXISTING SEWER LINE
EXISTING STORM DRAIN
GRADING LIMITS
ASPHALT
TOP OF SOIL CEMENT
MONEY SLOPE GRADE
CONTROL STRUCTURES
ARANTINE HILLS
JANUARY 25, 2017
PREPARED FOR:
THE NEW HOME COMPANY
85 ENTERPRISE, SUITE 430
ALISO VIEJO, CA 92656
PREPARED BY:
HUNSAKER & ASSOCIATES
IRVINE, INC.
PLANNING • ENGINEERING • SURVEYING
Irvine, CA 92618
PH (949) 583-1010
FAX (949) 583-0759
FEET
METERS
P:_0853\Planning\Base Files_0853_TTBS-Arantine.dwg

MASTER DRAINAGE PLAN
FOR
TRACT 36294
MASS GRADING

CORONA, CALIFORNIA

Prepared for:

TNHC LAND COMPANY, LLC
85 Enterprise, Suite 450
Aliso, Viejo, CA 92656

Prepared by:

CASC Engineering and Consulting
a dba of AEI-CASC Engineering, Inc.

1470 E. Cooley Dr.
Colton, CA 92324
(909) 783-0101 ·Fax (909) 783-0108

December 3, 2015

TABLE OF CONTENTS

PAGE

I. PURPOSE AND SCOPE 1
II. PROJECT SITE AND DRAINAGE AREA OVERVIEW 1
III. PREVIOUS STUDIES 2
IV. HYDROLOGY 2
V. FLOOD PLAIN STUDY 3
VI. FACILITY DESIGN CRITERIA 3
VII. EXISTING FACILITIES 6
VIII. RECOMMENDED PLAN 6
IX. RECOMMENDATIONS 10
X. REFERENCES 10

FIGURES

FIGURE 1: REGIONAL LOCATION MAP
FIGURE 2: LOCAL VICINITY MAP
FIGURE 3: FEMA FLOODPLAIN MAP
FIGURE 4: DETENTION BASIN/WATER QUALITY BASIN SCHEMATIC
FIGURE 5: LAND USE MAP
FIGURE 6: DETENTION BASIN "A" OUTLET DETAILS
FIGURE 7: DETENTION BASIN "B" OUTLET DETAILS

APPENDIX

APPENDIX A: HYDROLOGY CALCULATIONS BASED ON EXISTING CONDITION FOR AREA "A" (RATIONAL TABLING METHOD)

APPENDIX A.1: 100-YEAR RATIONAL TABLING CALCULATIONS

APPENDIX A.2: 10-YEAR RATIONAL TABLING CALCULATIONS

APPENDIX A.3: 2-YEAR RATIONAL TABLING CALCULATIONS

APPENDIX B: HYDROLOGY CALCULATIONS BASED ON PROPOSED CONDITION FOR AREA "A" (RATIONAL TABLING METHOD)

APPENDIX B.1: 100-YEAR RATIONAL TABLING CALCULATIONS

APPENDIX B.2: 10-YEAR RATIONAL TABLING CALCULATIONS

APPENDIX B.3: 2-YEAR RATIONAL TABLING CALCULATIONS

APPENDIX C: HYDROLOGY CALCULATIONS BASED ON EXISTING CONDITION FOR AREA "B" (RATIONAL TABLING METHOD)

APPENDIX C.1: 100-YEAR RATIONAL TABLING CALCULATIONS

APPENDIX C.2: 10-YEAR RATIONAL TABLING CALCULATIONS

APPENDIX C.3: 2-YEAR RATIONAL TABLING CALCULATIONS

APPENDIX D: HYDROLOGY CALCULATIONS BASED ON PROPOSED CONDITION FOR AREA "B" (RATIONAL TABLING METHOD)

APPENDIX D.1: 100-YEAR RATIONAL TABLING CALCULATIONS

APPENDIX D.2: 10-YEAR RATIONAL TABLING CALCULATIONS

APPENDIX D.3: 2-YEAR RATIONAL TABLING CALCULATIONS

APPENDIX E: HYDROLOGY CALCULATIONS BASED ON EXISTING CONDITION FOR AREA "A" (HYDROGRAPH METHOD)

APPENDIX E.1: 100-YEAR HYDROGRAPH CALCULATIONS

APPENDIX E.2: 10 – YEAR HYDROGRAPH CALCULATIONS

APPENDIX E.3: 5 – YEAR HYDROGRAPH CALCULATIONS

APPENDIX E.4: 2-YEAR HYDROGRAPH CALCULATIONS

APPENDIX F: HYDROLOGY CALCULATIONS BASED ON PROPOSED CONDITION FOR AREA "A" (HYDROGRAPH METHOD)

APPENDIX F.1: 100-YEAR HYDROGRAPH CALCULATIONS

APPENDIX F.2: 10 – YEAR HYDROGRAPH CALCULATIONS

APPENDIX F.3: 5 – YEAR HYDROGRAPHIC CALCULATIONS

APPENDIX F.4: 2-YEAR HYDROGRAPH CALCULATIONS

APPENDIX G: HYDROLOGY CALCULATIONS BASED ON EXISTING CONDITION FOR AREA "B" (HYDROGRAPH METHOD)

APPENDIX G.1: 100-YEAR HYDROGRAPH CALCULATIONS

APPENDIX G.2: 10 – YEAR HYDROGRAPH CALCULATIONS

APPENDIX G.3: 5 – YEAR HYDROGRAPH CALCULATIONS

APPENDIX G.4: 2-YEAR HYDROGRAPH CALCULATIONS

APPENDIX H: HYDROLOGY CALCULATIONS BASED ON PROPOSED CONDITION FOR AREA "B" (HYDROGRAPH METHOD)

APPENDIX H.1: 100-YEAR HYDROGRAPH CALCULATIONS

APPENDIX H.2: 10 – YEAR HYDROGRAPH CALCULATIONS

APPENDIX H.3: 5 – YEAR HYDROGRAPH CALCULATIONS

APPENDIX H.4: 2-YEAR HYDROGRAPH CALCULATIONS

APPENDIX I: BASIN ROUTING CALCULATIONS FOR DETENTION BASIN "A"

APPENDIX I.1: 100-YEAR BASIN ROUTING CALCULATIONS

APPENDIX I.2 10-YEAR BASIN ROUTING CALCULATIONS

APPENDIX I.3 5-YEAR BASIN ROUTING CALCULATIONS

APPENDIX I.4: 2-YEAR BASIN ROUTING CALCULATIONS

APPENDIX J: BASIN ROUTING CALCULATIONS FOR DETENTION BASIN "B"

APPENDIX J.1: 100-YEAR BASIN ROUTING CALCULATIONS

APPENDIX J.2: 10-YEAR BASIN ROUTING CALCULATIONS

APPENDIX J.3: 5-YEAR BASIN ROUTING CALCULATIONS

APPENDIX J.4: 2-YEAR BASIN ROUTING CALCULATIONS

APPENDIX K: HYDRAULIC ANALYSIS

APPENDIX K.1: WATER SURFACE PRESSURE GRADIENT (WSPG) HYDRAULIC CALCULATIONS - BEDFORD WASH CONCRETE CHANNEL

APPENDIX K.2: WSPG CALCULATIONS – ON-SITE INFRASTRUCTURE

APPENDIX K.3: CSU RIGID BOUNDARY BASIN – DESIGN CALCULATIONS

APPENDIX K.4: HEC-RAS 100-YEAR CALCULATIONS – BEDFORD WASH

APPENDIX K.5: HEC-RAS 5-YEAR CALCULATIONS – BEDFORD WASH

APPENDIX K.6: HEC-RAS 2-YEAR CALCULATIONS – BEDFORD WASH

APPENDIX L: BACKUP CALCULATIONS (RATIONAL, UNIT HYDROGRAPH, AND BASIN ROUTING)

EXHIBITS & PLATES

EXHIBIT "A": HYDROLOGY MAP BASED ON EXISTING CONDITION – RATIONAL TABLING METHOD (SCALE: 1" = 100')

EXHIBIT "B": HYDROLOGY MAP BASED ON PROPOSED CONDITION – RATIONAL TABLING METHOD (SCALE: 1" = 100')

EXHIBIT "C": HYDROLOGY MAP BASED ON EXISTING CONDITION – HYDROGRAPH METHOD (SCALE: 1" = 100')

EXHIBIT "D": HYDROLOGY MAP BASED ON PROPOSED CONDITION – HYDROGRAPH METHOD (SCALE: 1" = 100')

EXHIBIT "E": RCFC & WCD PLATES

PLATE "C 1.27": HYDROLOGIC SOILS GROUP MAP - CORONA SO.
PLATE "D 4.3": 2 YEAR - 1 HOUR PRECIPITATION
PLATE "D 4.4": 100 YEAR - 1 HOUR PRECIPITATION
PLATE "D 4.6": SLOPE OF INTENSITY DURATION CURVE
PLATE "D 5.5": RUN OFF INDEX NUMBERS FOR PREVIOUS AREA
PLATE "D 5.6": IMPERVIOUS COVER FOR DEVELOPED AREAS
PLATE "E 5.1": 2 YEAR - 3 HOUR PRECIPITATION
PLATE "E 5.2": 100 YEAR - 3 HOUR PRECIPITATION
PLATE "E 5.3": 2 YEAR - 6 HOUR PRECIPITATION
PLATE "E 5.4":100 YEAR - 6 HOUR PRECIPITATION
PLATE "E 5.5": 2 YEAR - 24 HOUR PRECIPITATION
PLATE "E 5.6":100 YEAR - 24 HOUR PRECIPITATION

EXHIBIT "F": BEDFORD CANYON WASH HEC-RAS SECTION MAP

I. PURPOSE AND SCOPE

The purpose of this report is to investigate and evaluate the drainage conditions of the Arantine Hills Project area and to develop a drainage plan that will provide this 276-acre project area with improved drainage and flood protection from the 100-year flood. Implementation of this plan, in conjunction with the improvement of the major drainage facility, the Bedford Canyon Wash Channel, will achieve this goal.

The scope of this drainage plan includes the following:

A. Review of available drainage reports for the project site.

B. Preparation of a drainage area map and points of flow concentration of storm runoff in the project area.

C. Determination of the quantities of the 100-year and 10-year storm runoff based on existing (pre-project) and proposed (with-project) conditions.

D. Determination of the location and size of the proposed drainage facilities.

E. Preparation of the drainage report and hydrology maps.

For purposes of this drainage plan, ultimate improvements to the Bedford Canyon Wash Channel located along the east side of the property are assumed to be in place. The development of preliminary plans and supporting studies for the Bedford Canyon Wash Channel is included in a separate report entitled, "Sediment Yield and Transport Study for Arantine Hills, Baseline and With-Project Conditions, Bedford Wash".

II. PROJECT SITE AND DRAINAGE AREA OVERVIEW

The Arantine Hills Specific Plan is located in the City of Corona. The project is generally bounded by Eagle Glen Parkway to the west, I-15 to the north, and Bedford Canyon Wash to the east (see Figure 1).

The drainage area covered by this plan consists of approximately 241 acres or 0.38 square miles (excluding the area tributary to the Bedford Canyon Wash Channel, which is approximately 35 acres). The watershed tributary to the Arantine Hills Specific Plan is characterized by uniform, steep slopes with elevations ranging from a high of 1,218 feet above sea level to a low of 894 feet near I-15. The 276-acre Arantine Hills project is currently undeveloped. The upper portion of the project site is covered with annual grass

and open brush. The project site generally slopes northerly at a grade of approximately 3-5 percent.

The project is impacted by Bedford Canyon Wash traversing along the southeast side of the property (see Figure 2). The flow tributary to this wash is currently conveyed in a natural channel. Bedford Canyon Wash discharges into Temescal Canyon Creek.

III. PREVIOUS STUDIES

AEI-CASC Consulting prepared a master drainage plan (MDP) in support of a previous SP application for this property in July 2002 (Reference 1). That MDP was used in the preparation of this report. A list of other study references is included in Section X.

IV. HYDROLOGY

Drainage basin boundaries and points of storm flow concentration associated with the existing or pre-project condition were determined utilizing the existing project site topography (2014 aerial topographic map). For the proposed with-project condition, the roadway and grading layouts were utilized in the analysis. Field investigations were conducted to verify the relative accuracy of the drainage boundaries. Exhibits "A" and "C" show the rational method and hydrograph method hydrology maps, respectively, for the existing condition while Exhibits "B" and "D" show the rational method and hydrograph method hydrology maps, respectively, for the proposed condition.

The results of the rational method calculations for Drainage Area "A" based upon the existing and proposed conditions are included in Appendix A and Appendix B, respectively. The results of the rational method calculations for Drainage Area "B" based upon the existing and proposed conditions are included in Appendix C and Appendix D, respectively.
The hydrograph calculations for Drainage Area "A" based upon the existing and proposed conditions are included in Appendix E and Appendix F, respectively, while the results of the hydrograph calculations for Drainage Area "B" based upon the existing and proposed conditions are included in Appendix G and Appendix H, respectively.

The RCFC & WCD Hydrology Manual was used to develop the hydrologic parameters for the 100-year, 10-year 5-year and 2-year storm events (Reference 2). The rational tabling method was utiltized to determine the peak flow rates for the study areas. Computations were performed using the RRIV computer program developed by CivilCadd/CivilDesign (CDD). The unit hydrograph method was utilized for basin routing. This method was performed using the UNRIV computer program developed by CDD.

The rainfall values and slope of intensity duration curves used for the study were obtained from the maps contained in the RCFCD hydrology manual (see Plates Attached). The rainfall values for the 2-year/1-hour and 100-year/1-hour storm events are 0.55 inches and 1.36 inches, respectively. For the 2-year/24-hour and 100-year/24-hour storm events, the rainfall values are 2.5 inches and 8.0 inches, respectively. The slope of intensity duration curve of 0.43 was used in the study (Plate D-4.6)

The entire study area consists of four hydrologic soils groups, A, B, C and D (Plate C1.27). Antecedent Moisture Condition (AMC) 2 was used to determine the peak storm flows and flood volumes for the 100-year and 10-year storm events, while AMC 1 was used to determine the peak storm flows and flood volumes for the 5-year and 2-year storm events.

Land use category descriptions for this drainage plan were derived from the Arantine Hills Specific Plan (see Figure 5 and Reference 6). For the existing condition hydrology analysis, grass, annual or perennial (fair) cover types were used.

V. FLOOD PLAIN STUDY

As shown on Figure 3, the Arantine Hills project is currently "unmapped". However, the area immediately downstream of I-15 and east of the project (adjacent to Bedford Canyon Wash) falls within the "Zone A" flood plain as determined by the Federal Emergency Management Agency (FEMA). The "Zone A" flood plain designation is defined by FEMA as "Areas of 100-year flood; base flood elevations and flood hazard factors not determined". The origin of this Zone "A" flood plain is the storm flows emanating from Bedford Canyon Wash.

FEMA has not mapped the flood plain information for the Arantine Hills project and in particular, for the Bedford Canyon Wash. AEI-CASC prepared a detailed flood plain and sediment transport study entitled, "Sediment Yield and Transport Study for Arantine Hills, Baseline and With-Project Conditions, Bedford Wash" (Reference 5). The flood plain information derived in that study will provide the existing, or "baseline", hydraulic parameters for the areas off-site from the Arantine Hills project. The parameters will be necessary for evaluating the adverse impacts, if any, associated with the construction of the proposed channel improvements.

VI. FACILITY DESIGN CRITERIA

Criteria for the conceptual layout and design of drainage improvements were adopted based on the current guidelines of the City of Corona and Riverside County Flood Control and Water Conservation District (RCFC & WCD). The criteria are defined below:

A. UNDERGROUND STORM DRAINS

All underground storm drains proposed in this plan are intended to collect local urban runoff and offsite undeveloped flows. For the most part, these drains are located in existing and proposed street rights-of-way including proposed easements. For local and major streets located within the plan area, runoff from a 10-year storm is allowed to accumulate in the streets until it reaches the top of the curb. The 100-year storm flow, on the other hand, is allowed to accumulate within the street section until it reaches the right-of-way. If either of these two conditions is violated, the plan proposes to construct an underground storm drain to convey the tributary 100-year flows. These conduits are proposed to be either reinforced concrete pipes (RCP) or cast-in-place concrete pipes (CIPCP) or reinforced concrete boxes (RCB). Manning's roughness coefficients (n-values) of 0.013 and 0.014 were used for the proposed RCPs, RCBs, and CIPCPs respectively.

B. OPEN CHANNELS

Open channels are proposed when construction and right-of-way costs for a channel improvement prove to be significantly less than the costs of an underground storm drain. The open channels proposed within this plan are temporary facilities which are designed to convey the peak 100-year storm flows. These channels are proposed to be lined with concrete with 1.5:1 side slopes. A manning's N-value of 0.015 is used to perform the normal-depth calculations. A minimum channel freeboard of 1.0 feet is used since these are temporary facilities on private property, and will be replaced with permanent underground facilities.

C. DETENTION BASINS

The proposed detention basins are designed to ensure that the total combined developed outflows are less than or equal to the existing undeveloped flows for the 2-year, 5-year, 10-year and 100-year, 24-hour storm events (see Figure 4). The 24-hour event duration, for all return periods, typically generates the lowest peak flow rate and the highest flood volume. Therefore, the detention basins are capable of also handling the 1-hour, 3-hour, and 6-hour events for all four return periods.

The proposed detention basin design volumes include the volumes required for treatment by the water quality basins, as the water quality basins will be situated within the footprint of each proposed detention basin (Figure 4). The incorporation of a water quality basin within each detention basin will allow for the treatment of runoff flows as well as flood control without requiring additional on-site area. Basin "A" utilizes Infiltration for water quality treatment, while Basin "B" utilizes a Sand Filter for water

quality treatment, since the infiltration rate is only 0.3in/hr. This design will be in accordance with the City's and RCFC & WCD requirements.

Each proposed detention basin will be sized based upon the design criteria established by RCFC & WCD (Reference 3), and located within a drainage easement. The proposed detention basins will each have an emergency spillway capable of safely conveying the 100-year flood. A minimum freeboard of one foot above the 100-year water surface elevation will be incorporated in the basin design.

D. WATER QUALITY BASINS

The drainage plan proposes to construct water quality basins to remove pollutants from surface runoff by capturing the tributary water quality volume and treating flows via infiltration (Basin "A") or sand filtration (Basin "B"). The detention/water quality basins will be owned and maintained by the development's Home Owners' Association.

The primary functions of the proposed water quality basins are to remove pollutants from storm water runoff and to recharge or replenish the ground water. Additionally, these basins can significantly reduce the total annual surface runoff volume, which can reduce stream or overland erosion and other adverse impacts to stream habitat from the proposed development project. The water quality basins will be sized based upon ASCE Manual and Report on Engineering Practice No. 87 (Reference 7). The water quality volume quantity will be included in the detention basin storage volume.

Proposed Drainage Design and Maintenance Program

1. All drainage facilities and flood control measures will be designed in accordance with the requirements of the City of Corona and RCFC & WCD.

2. The proposed public drainage facilities will be maintained by the City of Corona and RCFC & WCD.

3. Detention basins are proposed in order to mitigate the impact of increased runoff due to the proposed development.

4. This project shall comply with the requirements of the State Water Resources Control Board (SWRCB) Order No. 2009-0009-DWQ permit as amended by Order No. 2010-0014-DWQ (NPDES No. CAS000002) and 2012-0006-DWQ at the time of final development entitlement. All projects proposing construction activities including cleaning, grading or excavation that results in the disturbance of at least one acre of total land area should obtain the appropriate State General Permit for National Pollution

Discharge Elimination System (NPDES) and pay the appropriate fees. All developments within the Specific Plan boundaries shall be subject to future requirements adopted by the City for implementation of the NPDES program.

5. Water quality basins are proposed in order to remove pollutants from surface discharges by capturing the tributary water quality volume and infiltrating or sand filtering it prior to the next significant storm event. The water quality basin will be located within the footprint of the proposed detention basin (see Figure 4). The primary functions of the proposed water quality basins are to remove pollutants from storm water runoff and to recharge or replenish the ground water. Maintenance of the water quality basins (Infiltration Basin and Sand Filter Basin) shall be in accordance with the maintenance requirements outlined in the project's Preliminary Water Quality Management Plan (P-WQMP).

6. Storm drainage facilities should ensure the acceptance and disposal of storm run-off without damage to streets or adjacent properties.

VII. EXISTING FACILITIES

With the exception of the Bedford Canyon Wash that runs along the southeast side of the project and small culverts under I-15 near the southeast and northeast sides of the project, there are no other drainage facilities existing near and within the project area.

VIII. RECOMMENDED PLAN

The drainage plan for the Arantine Hills project proposes a system of drainage channels, underground storm drains and basins to intercept and convey the storm flows generated by the project site as well as off-site run-on flows.

Bedford Canyon Wash is to maintain the existing 5-year flows within the existing natural channel. The greater than 5-year flows will be split from the natural wash into a 26-foot-wide concrete rectangular channel via a side weir. The concrete rectangular channel is sized to convey the 100-year flow of 4,370 cfs with 40% bulking for a total 100-year bulked flow of 6,114 cfs. The approach is to maintain the existing bluffs within the Army Corps of Engineers (ACOE) jurisdictional limits to the south while minimizing the impacts due to water volume, depths and erosive velocities. The existing flow depths ranged from 6.1 – 10.9 feet with velocities from 8.3 – 14.4 fps. The 5-year flows will have flow depths ranging from 3.5 – 5.3 feet with velocities from 4.3 -11.1 fps. These reduced depths and velocities will minimize the erosion potential on the existing bluffs. The concrete rectangular channel will convey the flows to the northeasterly project limits then through a CSU Rigid Boundary Basin (RBB) per FHWA HEC No. 14 design requirements before it

outlets back into the existing natural Bedford Wash. Three (3) separate designs were analyzed for the CSU RBB. It was determined that the fifty-two (52) feet wide outlet would best reduce the flow velocities while allowing a reasonable transition back into existing Bedford Wash. A separate report entitled, "Sediment Yield and Transport Study for Arantine Hills, Baseline and With-Project Conditions, Bedford Wash".

The majority of the underground drainage facilities are proposed to be placed under the future streets. An open channel is proposed along the north side of the project site. Detention basins are proposed at two locations in order to mitigate increases in storm runoff due to the development of the various planning areas. These detention basins are located toward the north end of Planning Area 12 and the east end of Planning Area 11.

The improvements proposed by this plan are shown on Exhibits "B" and "D", which are enclosed in the back of this report. These exhibits not only show proposed preliminary alignments, but pertinent preliminary size information, as well as the design flow rates, and detention basin volumes and outflows.

Basin routing calculations for Basins "A" and "B" are included in Appendix I and Appendix J, respectively.

All proposed drainage infrastructure locations, sizes, and design flow rates can be found on Exhibit "B". The following is a brief description of the major on-site drainage improvements proposed in this MDP:

Line "A"

Line "A" is an approximately 1-mile-long storm drain system that extends from the Temporary Desilting Basin #1 Outlet Pipe, toward the upstream end of the Project site, to Basin "A", toward the downstream end. Line "A" is a concrete-lined trapezoidal channel with a bottom width that ranges from 4 feet to 6 feet, height from 3 feet to 5.5 feet, and side slopes of 1.5 horizontal to 1 vertical. The channel is proposed to intercept and convey the on-site peak 100-year storm flows from the majority of the Project site through direct runoff and multiple proposed lateral storm drains. Flows within Line "A" range from 91.2 cfs to 310.8 cfs, and discharge into Basin "A". Underground pipe culverts (54-inch and 72-inch RCPs) are proposed at two roadway crossings.

Detention Basin "A"

Detention Basin "A" is proposed to attenuate the increase in storm runoff due to the proposed development of the various upstream planning areas tributary to the basin. This basin is sized to attenuate the 2, 5, 10 and 100-year developed storm flows. The proposed basin volume of approximately 43.3 acre-feet includes the water quality volume required

for treatment of approximately 7.5 acre-feet. The basin will utilize a concrete outlet structure to regulate flows leaving the basin (See Figure 6). The bottom 2 feet of storage will be infiltrated and evaluated per the Project WQMP. The maximum basin outflow of 134.5 cfs will discharge to the Bedford Canyon Wash Channel. In the event the outlet structure fails, the basin also includes an emergency spillway capable of safely conveying the 100-year peak flow rate of 483.1 cfs. Table 8.1, below, shows the on-site peak flow rates for both the existing and proposed conditions, and the design outflows for Detention Basin "A". Basin routing calculations for Detention Basin "A" are included in Appendix I.

Table 8.1: Detention Basin "A" Routing Summary

EVENT FREQ./DURATION		PEAK FLOW RATE (CFS)		
		EXIST.	PROP.	OUTFLOWS
2-YR	1-HR	55.6	151.8	0.1
	3-HR	30.9	102.0	0.5
	6-HR	22.9	92.5	1.6
	24-HR	7.0	40.6	5.5
5-YR	1-HR	94.7	221.6	0.1
	3-HR	70.6	155.5	1.6
	6-HR	49.5	128.9	3.4
	24-HR	10.7	61.5	9.3
10-YR	1-HR	164.3	291.1	0.7
	3-HR	137.0	213.7	3.3
	6-HR	104.2	175.1	5.5
	24-HR	44.6	81.4	41.7
100-YR	1-HR	302.8	483.1	3.9
	3-HR	259.2	360.0	8.5
	6-HR	196.4	283.0	9.7
	24-HR	134.8	176.2	134.5

Line "F"

Line "F" is a proposed underground storm drain line designed to direct outflows from Detention Basin "A" to the Bedford Canyon Wash Channel. Line "F" consists of two 36-inch RCPs that are sized to convey the maximum basin outflow of 134.5 cfs.

Detention Basin "B"

Detention Basin "B" is proposed to attenuate the increase in storm runoff due to the proposed development of the upstream Planning Area 11. This basin is sized to attenuate

the 2, 5, 10 and 100-year developed storm flows. The proposed basin volume of approximately 5.6 acre-feet includes the water quality volume required for treatment of approximately 1.2 acre-feet. The basin will utilize an 18-inch diameter outlet riser to regulate flows leaving the basin (See Figure 7). The bottom 1.58 feet of storage will be infiltrated and evaluated per the Project WQMP. The maximum basin outflow of 17.5 cfs will discharge to the existing watercourse running along the south side of I-15 via the proposed Line "G". In the event the outlet riser fails, the basin also includes an emergency spillway capable of safely conveying the 100-year peak flow rate of 58.7 cfs. Table 8.2, below, shows the on-site peak flow rates for both the existing and proposed conditions, and the design outflows for Detention Basin "B". Basin routing calculations for Detention Basin "B" are included in Appendix J.

Table 8.2: Detention Basin "B" Routing Summary

EVENT FREQ./DURATION		PEAK FLOW RATE (CFS)		
		EXIST.	PROP.	OUTFLOWS
2-YR	1-HR	13.7	20.9	0.0
	3-HR	7.0	15.6	0.1
	6-HR	5.6	14.3	0.3
	24-HR	0.8	5.6	0.7
5-YR	1-HR	21.9	29.3	0.1
	3-HR	13.1	22.1	0.3
	6-HR	9.7	19.2	0.6
	24-HR	1.1	8.5	1.6
10-YR	1-HR	32.9	37.0	0.1
	3-HR	22.2	28.2	0.5
	6-HR	17.4	24.2	0.7
	24-HR	7.6	11.9	6.5
100-YR	1-HR	54.8	58.7	0.5
	3-HR	37.9	44.5	1.3
	6-HR	28.9	36.7	1.7
	24-HR	17.4	21.7	17.5

Line "G"

Line "G" is a proposed underground storm drain pipe designed to direct outflows from Detention Basin "B" to the existing watercourse running along the south side of I-15. Line "G" is a 30-inch RCP that is sized to convey the maximum basin outflow of 17.5 cfs.

Transverse Levee

The Transverse Levee system is located along the southerly boundary of the Project site. The Transverse Levee system consists of a concrete-lined open channel and levee, and is primarily designed to intercept and convey the 100-year breakout or errant flows from Bedford Canyon Channel. The channel portion is trapezoidal shaped with a bottom width of 6 feet, height of 8 feet, and side slopes of 1.5 horizontal to 1 vertical. The levee is concrete lined with side slopes of 1.5 horizontal to 1 vertical and varying height. The height of the levee varies from a maximum height of 10 feet and minimum height of 5 feet measured from the top of the concrete-lined channel to the top of the levee. The channel portion of the system has the capacity to convey approximately the 10-year **clear-water** flow of 2,535 cfs, which is equivalent to just over the 5-year **bulked** flow condition. The combined channel and levee system is able to convey the entire 100-year **bulked** flow of Bedford Canyon Channel with a minimum of 7.4 feet of freeboard (i.e. 4.4 feet of freeboard for super-elevation plus 3 feet of freeboard for levee condition). The 100-year storm flow emanating from the local off-site area is 39.4 cfs, which can easily be accommodated by the proposed system. The Transverse Levee system will require a right of way width of 54 feet. In order to provide access for future development to the south, Street "B" will be extended southerly across the Transverse Levee. This drainage system will be modified to include a culvert (pipe or box) under the roadway to allow safe passage of storm flows. The Transverse Levee is identified on Exhibit "B".

IX. RECOMMENDATIONS

This report recommends that:

- The master drainage plan, as set forth herein, be approved and adopted by the City of Corona as part of the overall master plan of drainage for the City.

- The master drainage plan, as set forth herein, be used as support for the mass grading developments within the Arantine Hills Specific Plan area and that such developments be required to conform to the plan insofar as possible.

X. REFERENCES

1. AEI CASC Companies, *Arantine Hills Master Drainage Plan*, 2002.

2. Riverside County Flood Control and Water Conservation District; *Hydrology Manual*, April 1978.

3. Riverside County Flood Control and Water Conservation District; *Criteria for Sizing*

Increased Runoff Detention Basin Facilities, 1999.

4. Federal Emergency Management Agency, *Flood Insurance Study, Riverside County, CA, Unincorporated Areas, Revised* September 30, 1992.

5. AEI CASC Companies, *"Sediment Yield and Transport Study for Arantine Hills, Baseline and With-Project Conditions, Bedford Wash"*, August 2010.

6. AEI CASC Companies, *Arantine Hills Specific Plan*, August 2001.

7. ASCE Manual and Report on Engineering Practice No. 87, 1998

FIGURE 1: REGIONAL LOCATION MAP

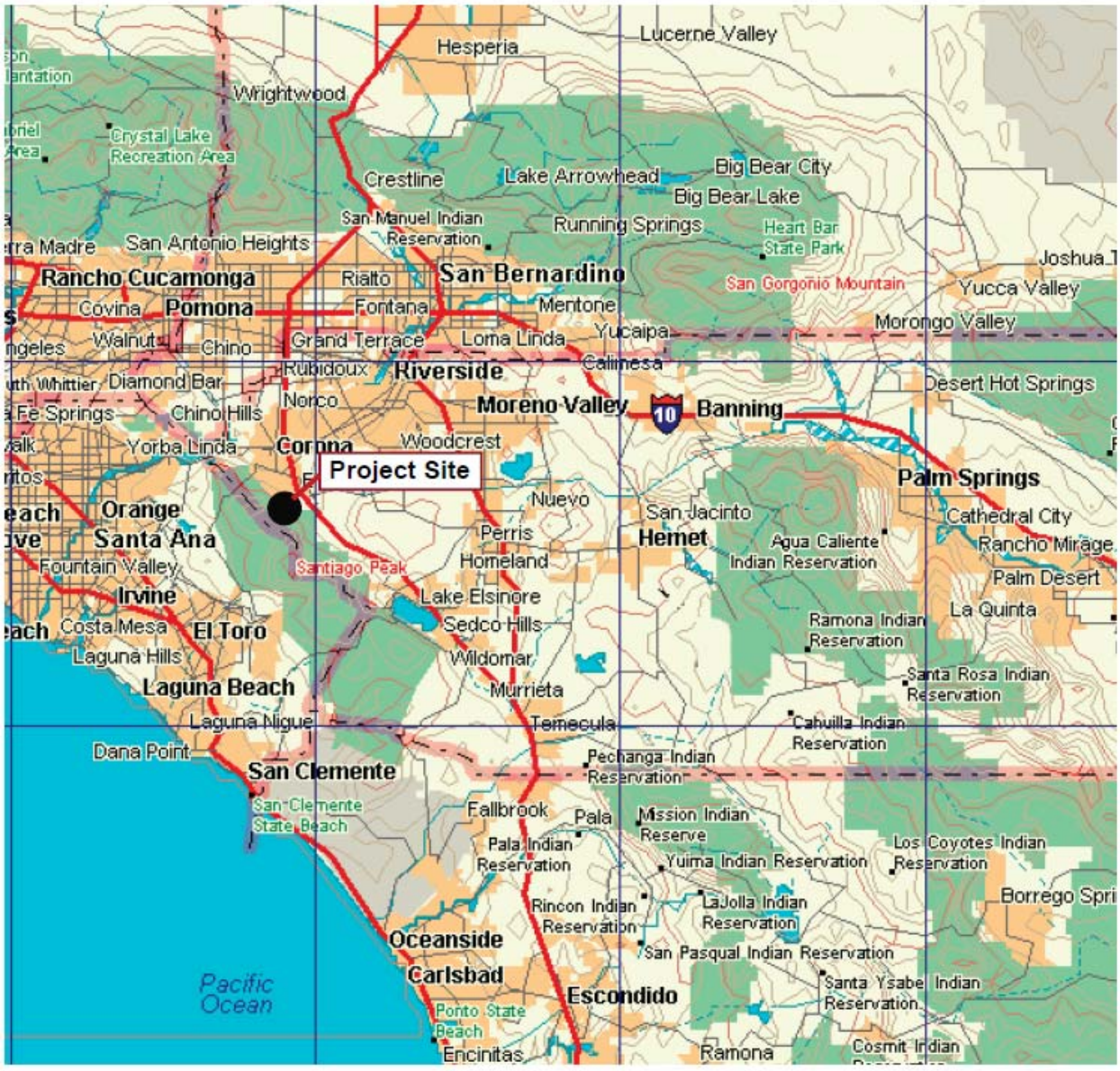


FIGURE 2: LOCAL VICINITY MAP



FIGURE 3: FEMA FLOOD PLAIN MAP

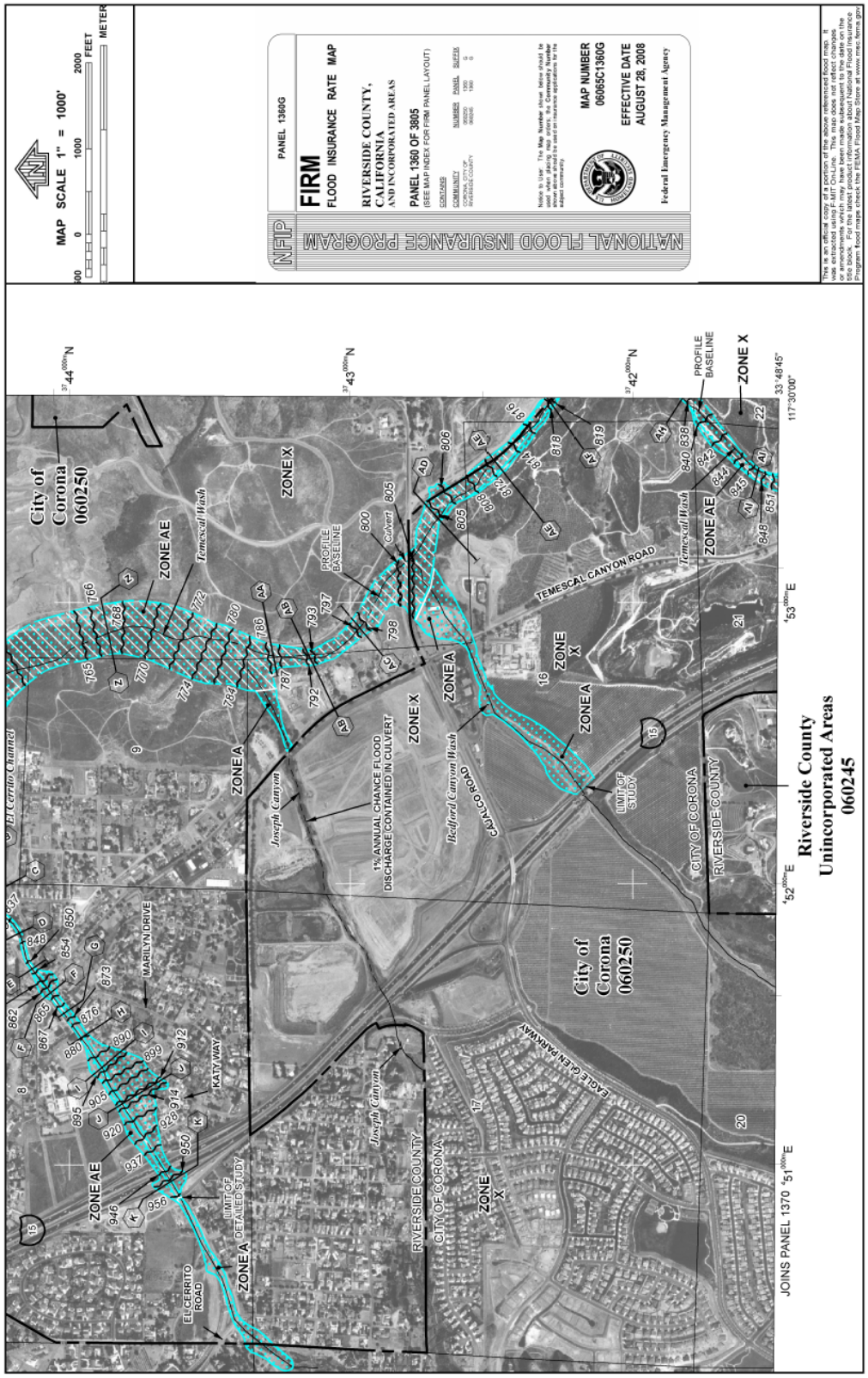


FIGURE 4: DETENTION BASIN/WATER QUALITY BASIN SCHEMATIC

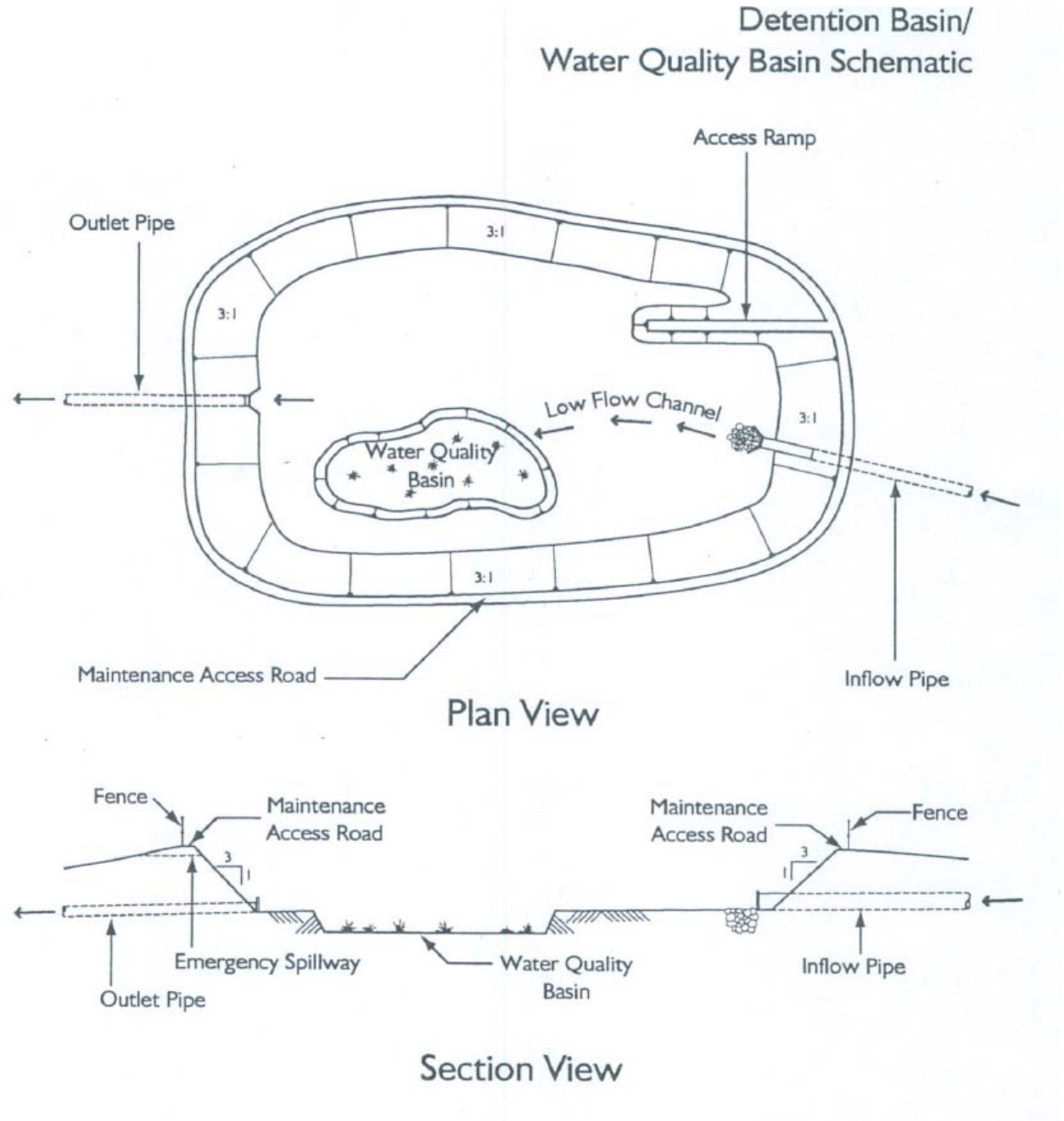


FIGURE 5: LAND USE MAP

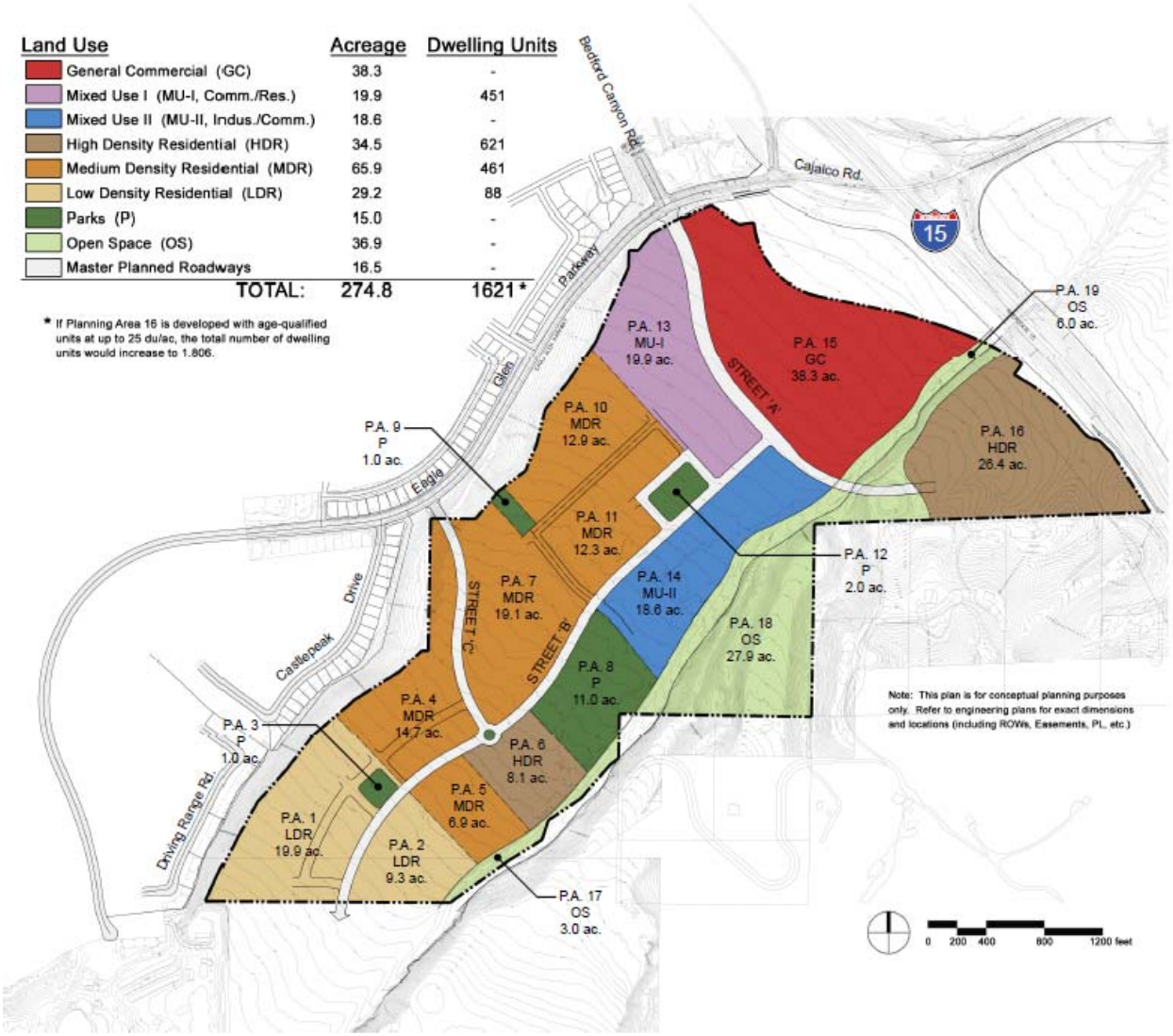


FIGURE 6: DETENTION BASIN "A" OUTLET DETAILS

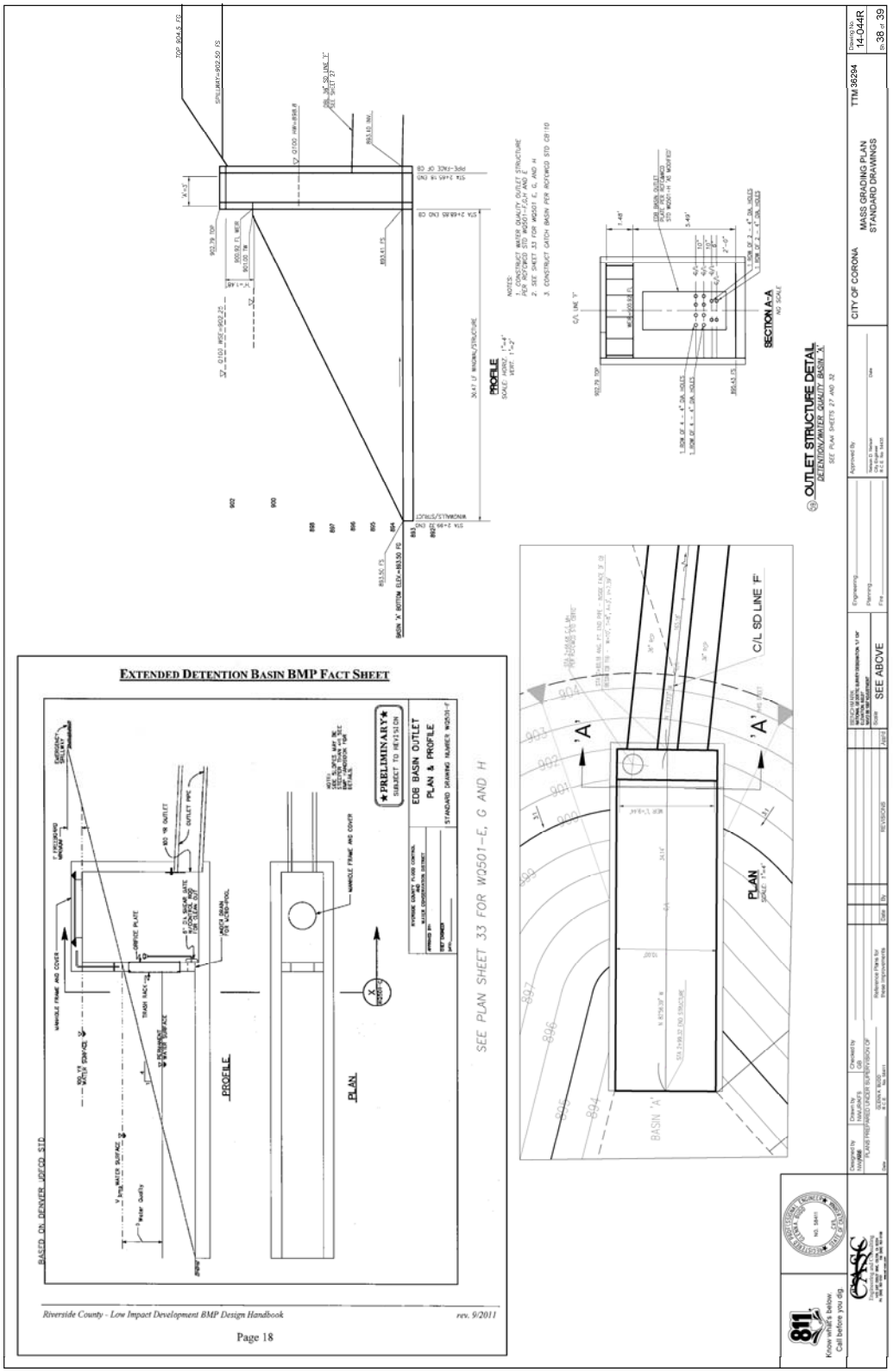
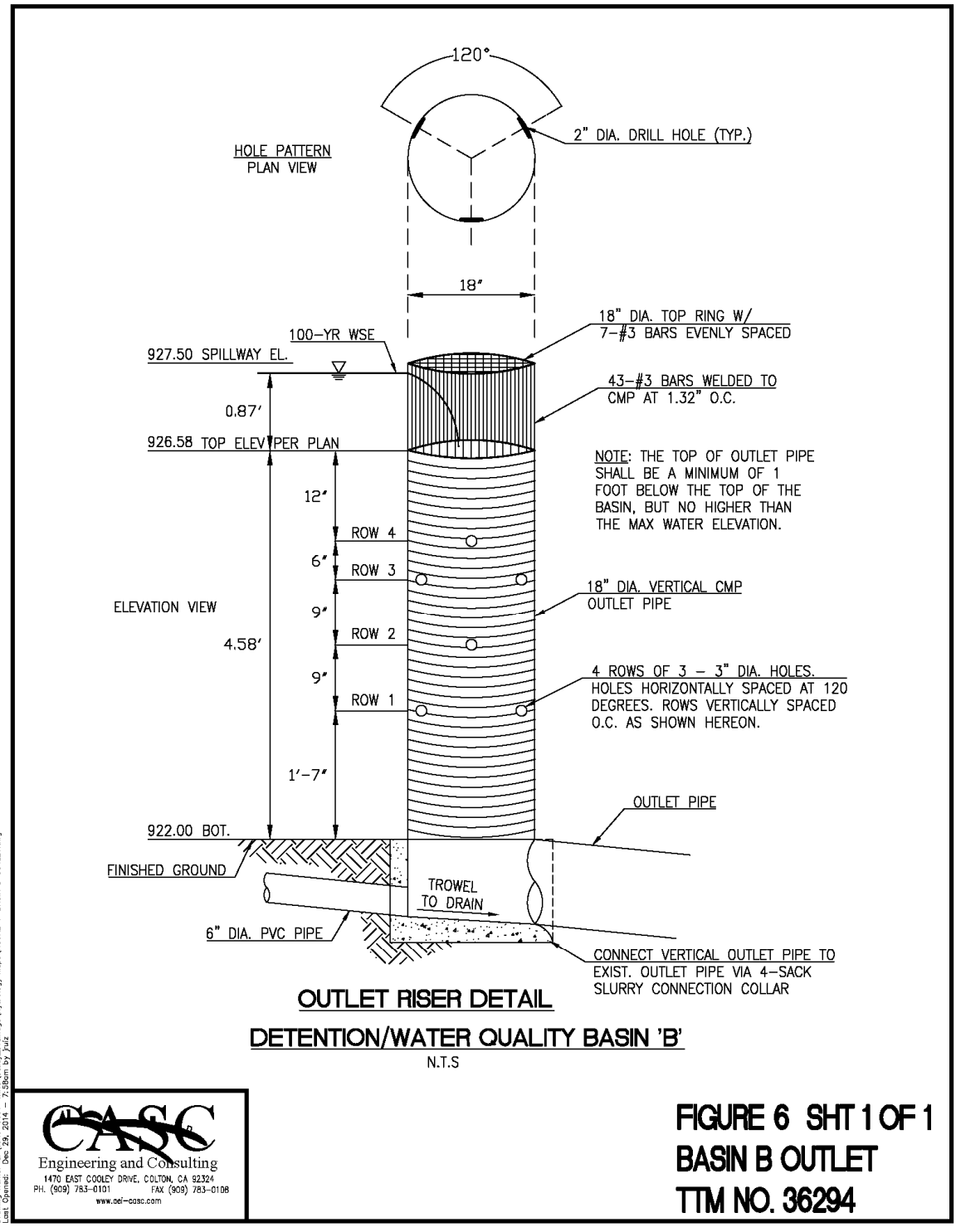


FIGURE 7: DETENTION BASIN "B" OUTLET DETAILS



APPENDIX A: HYDROLOGY CALCULATIONS BASED ON EXISTING CONDITION FOR AREA “A” (RATIONAL TABLING METHOD)

APPENDIX A.1: AREA “A” - EXISTING CONDITION
100 – YEAR RATIONAL TABLING CALCULATIONS

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 06/01/15 File:AEX100.out

TRACT NO. 36294
AREA A
100YR - EXISTING CONDITION
FN: AEX100

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6268

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

2 year, 1 hour precipitation = 0.550(In.)
100 year, 1 hour precipitation = 1.360(In.)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.360(In/Hr)
Slope of intensity duration curve = 0.4300

++

Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 993.000(Ft.)
Top (of initial area) elevation = 1218.000(Ft.)
Bottom (of initial area) elevation = 1096.000(Ft.)
Difference in elevation = 122.000(Ft.)
Slope = 0.12286 s(percent)= 12.29
TC = k(0.541)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.994 min.
Rainfall intensity = 2.626(In/Hr) for a 100.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.821
Decimal fraction soil group A = 0.010
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.990
RI index for soil(AMC 2) = 84.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 6.464(CFS)
Total initial stream area = 3.000(Ac.)
Pervious area fraction = 1.000

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      106.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------
Top of natural channel elevation =   1096.000(Ft.)
End of natural channel elevation =   1038.000(Ft.)
Length of natural channel  =  1402.000(Ft.)
Estimated mean flow rate at midpoint of channel =     12.583(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   5.39(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0414
Corrected/adjusted channel slope =  0.0414
Travel time =    4.33 min.     TC =   17.33  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.774
Decimal fraction soil group A = 0.180
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.820
RI index for soil(AMC 2)  =  78.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.320(In/Hr) for a   100.0 year storm
Subarea runoff =     10.205(CFS) for      5.680(Ac.)
Total runoff =     16.669(CFS)   Total area =       8.680(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      106.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      8.680(Ac.)
Runoff from this stream =     16.669(CFS)
Time of concentration =   17.33 min.
Rainfall intensity =     2.320(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------
Initial area flow distance =   991.000(Ft.)
Top (of initial area) elevation =  1139.000(Ft.)
Bottom (of initial area) elevation =  1093.000(Ft.)
Difference in elevation =    46.000(Ft.)
Slope =    0.04642  s(percent)=       4.64
TC = k(1.076)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   31.387 min.
Rainfall intensity =      1.797(In/Hr) for a   100.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.534
```

```
Decimal fraction soil group A = 0.960
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.040
RI index for soil(AMC 2)  =  52.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      6.258(CFS)
Total initial stream area =        6.520(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      106.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1093.000(Ft.)
End of natural channel elevation =   1038.000(Ft.)
Length of natural channel  =  1270.000(Ft.)
Estimated mean flow rate at midpoint of channel =      9.800(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   5.17(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0433
Corrected/adjusted channel slope =  0.0433
Travel time =    4.09 min.     TC =   35.48  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.505
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  50.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.705(In/Hr) for a   100.0 year storm
Subarea runoff =      6.354(CFS) for      7.380(Ac.)
Total runoff =     12.612(CFS)   Total area =      13.900(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      106.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     13.900(Ac.)
Runoff from this stream =     12.612(CFS)
Time of concentration =   35.48 min.
Rainfall intensity =     1.705(In/Hr)
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      105.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
```

```
Initial area flow distance =   924.000(Ft.)
Top (of initial area) elevation =  1132.000(Ft.)
Bottom (of initial area) elevation =  1091.000(Ft.)
Difference in elevation =    41.000(Ft.)
Slope =    0.04437  s(percent)=       4.44
TC = k(1.123)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   32.150 min.
Rainfall intensity =      1.779(In/Hr) for a   100.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.514
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  50.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      7.355(CFS)
Total initial stream area =        8.040(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      106.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1091.000(Ft.)
End of natural channel elevation =   1038.000(Ft.)
Length of natural channel  =  1360.000(Ft.)
Estimated mean flow rate at midpoint of channel =     13.233(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   5.30(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0390
Corrected/adjusted channel slope =  0.0390
Travel time =    4.28 min.     TC =   36.42  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.503
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  50.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.686(In/Hr) for a   100.0 year storm
Subarea runoff =     10.884(CFS) for     12.850(Ac.)
Total runoff =     18.239(CFS)   Total area =      20.890(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      106.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =     20.890(Ac.)
```

```
Runoff from this stream =     18.239(CFS)
Time of concentration =   36.42 min.
Rainfall intensity =     1.686(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       16.669     17.33           2.320
2       12.612     35.48           1.705
3       18.239     36.42           1.686
Largest stream flow has longer time of concentration
Qp =     18.239 + sum of
         Qb         Ia/Ib
         16.669 *    0.727 =     12.111
         Qb         Ia/Ib
         12.612 *    0.989 =     12.470
Qp =     42.820

Total of 3 main streams to confluence:
Flow rates before confluence point:
      16.669      12.612      18.239
Area of streams before confluence:
        8.680       13.900       20.890


Results of confluence:
Total flow rate =     42.820(CFS)
Time of concentration =    36.425 min.
Effective stream area after confluence  =     43.470(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      109.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1038.000(Ft.)
End of natural channel elevation =    958.000(Ft.)
Length of natural channel  =  2128.000(Ft.)
Estimated mean flow rate at midpoint of channel =     55.852(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   7.75(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0376
Corrected/adjusted channel slope =  0.0376
Travel time =    4.58 min.     TC =   41.00  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.688
Decimal fraction soil group A = 0.240
Decimal fraction soil group B = 0.220
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.540
RI index for soil(AMC 2)  =  73.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
```

```
Rainfall intensity =      1.602(In/Hr) for a   100.0 year storm
Subarea runoff =     29.168(CFS) for     26.460(Ac.)
Total runoff =     71.988(CFS)   Total area =      69.930(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      109.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     69.930(Ac.)
Runoff from this stream =     71.988(CFS)
Time of concentration =   41.00 min.
Rainfall intensity =     1.602(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      108.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   981.000(Ft.)
Top (of initial area) elevation =  1072.000(Ft.)
Bottom (of initial area) elevation =  1033.000(Ft.)
Difference in elevation =    39.000(Ft.)
Slope =    0.03976  s(percent)=       3.98
TC = k(1.123)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   33.660 min.
Rainfall intensity =      1.744(In/Hr) for a   100.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.510
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  50.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      5.576(CFS)
Total initial stream area =        6.270(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      109.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1033.000(Ft.)
End of natural channel elevation =    958.000(Ft.)
Length of natural channel  =  2180.000(Ft.)
Estimated mean flow rate at midpoint of channel =     10.868(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   4.73(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0344
Corrected/adjusted channel slope =  0.0344
Travel time =    7.67 min.     TC =   41.33  min.
```

```
 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.493
Decimal fraction soil group A = 0.980
Decimal fraction soil group B = 0.020
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  50.00
Pervious area fraction =  0.993; Impervious fraction =  0.007
Rainfall intensity =      1.596(In/Hr) for a   100.0 year storm
Subarea runoff =      9.371(CFS) for     11.900(Ac.)
Total runoff =     14.947(CFS)   Total area =      18.170(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      109.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     18.170(Ac.)
Runoff from this stream =     14.947(CFS)
Time of concentration =   41.33 min.
Rainfall intensity =     1.596(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       71.988     41.00           1.602
2       14.947     41.33           1.596
Largest stream flow has longer or shorter time of concentration
Qp =     71.988 + sum of
         Qa          Tb/Ta
         14.947 *    0.992 =     14.827
Qp =     86.815

Total of 2 main streams to confluence:
Flow rates before confluence point:
      71.988      14.947
Area of streams before confluence:
       69.930       18.170


Results of confluence:
Total flow rate =     86.815(CFS)
Time of concentration =    41.002 min.
Effective stream area after confluence  =     88.100(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      110.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =    958.000(Ft.)
End of natural channel elevation =    920.000(Ft.)
Length of natural channel  =  1377.000(Ft.)
Estimated mean flow rate at midpoint of channel =     95.388(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
```

```
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   7.77(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
      Normal channel slope =  0.0276
Corrected/adjusted channel slope =  0.0276
Travel time =    2.95 min.     TC =   43.95  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.581
Decimal fraction soil group A = 0.670
Decimal fraction soil group B = 0.040
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.290
RI index for soil(AMC 2)  =  61.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.555(In/Hr) for a   100.0 year storm
Subarea runoff =     15.725(CFS) for     17.400(Ac.)
Total runoff =    102.540(CFS)   Total area =     105.500(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      110.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =    105.500(Ac.)
Runoff from this stream =    102.540(CFS)
Time of concentration =   43.95 min.
Rainfall intensity =     1.555(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1      102.540     43.95           1.555
Largest stream flow has longer time of concentration
Qp =    102.540 + sum of
Qp =    102.540

Total of 1 main streams to confluence:
Flow rates before confluence point:
     102.540
Area of streams before confluence:
      105.500


Results of confluence:
Total flow rate =    102.540(CFS)
Time of concentration =    43.954 min.
Effective stream area after confluence  =    105.500(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      112.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   921.000(Ft.)
```

```
Top (of initial area) elevation =  1095.000(Ft.)
Bottom (of initial area) elevation =  1058.000(Ft.)
Difference in elevation =    37.000(Ft.)
Slope =    0.04017  s(percent)=       4.02
TC = k(1.123)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   32.753 min.
Rainfall intensity =      1.764(In/Hr) for a   100.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.513
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  50.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      4.748(CFS)
Total initial stream area =        5.250(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      112.000 to Point/Station      113.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1058.000(Ft.)
End of natural channel elevation =   1015.000(Ft.)
Length of natural channel  =  1231.000(Ft.)
Estimated mean flow rate at midpoint of channel =     12.025(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   4.90(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0349
Corrected/adjusted channel slope =  0.0349
Travel time =    4.19 min.     TC =   36.94  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.501
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  50.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.675(In/Hr) for a   100.0 year storm
Subarea runoff =     13.509(CFS) for     16.090(Ac.)
Total runoff =     18.258(CFS)   Total area =      21.340(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      113.000 to Point/Station      114.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1015.000(Ft.)
End of natural channel elevation =    967.000(Ft.)
Length of natural channel  =  1401.000(Ft.)
Estimated mean flow rate at midpoint of channel =     26.668(CFS)
```

```
Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   6.00(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0343
Corrected/adjusted channel slope =  0.0343
Travel time =    3.89 min.     TC =   40.83  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.562
Decimal fraction soil group A = 0.560
Decimal fraction soil group B = 0.440
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  58.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.605(In/Hr) for a   100.0 year storm
Subarea runoff =     17.728(CFS) for     19.660(Ac.)
Total runoff =     35.985(CFS)   Total area =      41.000(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      114.000 to Point/Station      117.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =    965.000(Ft.)
End of natural channel elevation =    897.000(Ft.)
Length of natural channel  =  2203.000(Ft.)
Estimated mean flow rate at midpoint of channel =     46.298(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   6.65(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0309
Corrected/adjusted channel slope =  0.0309
Travel time =    5.52 min.     TC =   46.35  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.568
Decimal fraction soil group A = 0.520
Decimal fraction soil group B = 0.410
Decimal fraction soil group C = 0.040
Decimal fraction soil group D = 0.030
RI index for soil(AMC 2)  =  60.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.520(In/Hr) for a   100.0 year storm
Subarea runoff =     20.278(CFS) for     23.500(Ac.)
Total runoff =     56.263(CFS)   Total area =      64.500(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

```
Process from Point/Station      114.000 to Point/Station      117.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     64.500(Ac.)
Runoff from this stream =     56.263(CFS)
Time of concentration =   46.35 min.
Rainfall intensity =     1.520(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      115.000 to Point/Station      116.000
**** INITIAL AREA EVALUATION ****
--------------------------------------------------------------------------------
Initial area flow distance =   947.000(Ft.)
Top (of initial area) elevation =   992.000(Ft.)
Bottom (of initial area) elevation =   959.000(Ft.)
Difference in elevation =    33.000(Ft.)
Slope =    0.03485  s(percent)=       3.48
TC = k(0.763)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   23.140 min.
Rainfall intensity =      2.049(In/Hr) for a   100.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.689
Decimal fraction soil group A = 0.060
Decimal fraction soil group B = 0.940
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  68.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      9.880(CFS)
Total initial stream area =        7.000(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      116.000 to Point/Station      117.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
--------------------------------------------------------------------------------
Top of natural channel elevation =    959.000(Ft.)
End of natural channel elevation =    897.000(Ft.)
Length of natural channel  =  2444.000(Ft.)
Estimated mean flow rate at midpoint of channel =     39.218(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   5.75(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0254
Corrected/adjusted channel slope =  0.0254
Travel time =    7.08 min.     TC =   30.22  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.589
Decimal fraction soil group A = 0.560
Decimal fraction soil group B = 0.440
```

```
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  58.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.826(In/Hr) for a   100.0 year storm
Subarea runoff =     44.701(CFS) for     41.570(Ac.)
Total runoff =     54.581(CFS)   Total area =      48.570(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      116.000 to Point/Station      117.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     48.570(Ac.)
Runoff from this stream =     54.581(CFS)
Time of concentration =   30.22 min.
Rainfall intensity =     1.826(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       56.263     46.35           1.520
2       54.581     30.22           1.826
Largest stream flow has longer time of concentration
Qp =     56.263 + sum of
         Qb         Ia/Ib
         54.581 *    0.832 =     45.412
Qp =    101.675

Total of 2 main streams to confluence:
Flow rates before confluence point:
      56.263      54.581
Area of streams before confluence:
       64.500       48.570


Results of confluence:
Total flow rate =    101.675(CFS)
Time of concentration =    46.355 min.
Effective stream area after confluence  =    113.070(Ac.)
End of computations, total study area =          218.57 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  58.8
```

APPENDIX A.2: AREA “A” - EXISTING CONDITION
10 – YEAR RATIONAL TABLING CALCULATIONS

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 06/01/15 File:AEX10.out

TRACT NO. 36294
AREA A
10YR - EXISTING CONDITION
FN: AEX10

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6268

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

2 year, 1 hour precipitation = 0.550(In.)
100 year, 1 hour precipitation = 1.360(In.)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.883(In/Hr)
Slope of intensity duration curve = 0.4300

++

Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 993.000(Ft.)
Top (of initial area) elevation = 1218.000(Ft.)
Bottom (of initial area) elevation = 1096.000(Ft.)
Difference in elevation = 122.000(Ft.)
Slope = 0.12286 s(percent)= 12.29
TC = k(0.541)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.994 min.
Rainfall intensity = 1.705(In/Hr) for a 10.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.783
Decimal fraction soil group A = 0.010
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.990
RI index for soil(AMC 2) = 84.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 4.007(CFS)
Total initial stream area = 3.000(Ac.)
Pervious area fraction = 1.000

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      106.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1096.000(Ft.)
End of natural channel elevation =   1038.000(Ft.)
Length of natural channel  =  1402.000(Ft.)
Estimated mean flow rate at midpoint of channel =      7.801(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   4.78(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0414
Corrected/adjusted channel slope =  0.0414
Travel time =    4.89 min.     TC =   17.89  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.718
Decimal fraction soil group A = 0.180
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.820
RI index for soil(AMC 2)  =  78.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.486(In/Hr) for a    10.0 year storm
Subarea runoff =      6.064(CFS) for      5.680(Ac.)
Total runoff =     10.071(CFS)   Total area =       8.680(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      106.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      8.680(Ac.)
Runoff from this stream =     10.071(CFS)
Time of concentration =   17.89 min.
Rainfall intensity =     1.486(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   991.000(Ft.)
Top (of initial area) elevation =  1139.000(Ft.)
Bottom (of initial area) elevation =  1093.000(Ft.)
Difference in elevation =    46.000(Ft.)
Slope =    0.04642  s(percent)=       4.64
TC = k(1.076)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   31.387 min.
Rainfall intensity =      1.167(In/Hr) for a    10.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.438
```

```
Decimal fraction soil group A = 0.960
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.040
RI index for soil(AMC 2)  =  52.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      3.333(CFS)
Total initial stream area =        6.520(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      106.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1093.000(Ft.)
End of natural channel elevation =   1038.000(Ft.)
Length of natural channel  =  1270.000(Ft.)
Estimated mean flow rate at midpoint of channel =      5.219(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   4.44(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0433
Corrected/adjusted channel slope =  0.0433
Travel time =    4.77 min.     TC =   36.16  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.406
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  50.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.098(In/Hr) for a    10.0 year storm
Subarea runoff =      3.294(CFS) for      7.380(Ac.)
Total runoff =      6.627(CFS)   Total area =      13.900(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      106.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     13.900(Ac.)
Runoff from this stream =      6.627(CFS)
Time of concentration =   36.16 min.
Rainfall intensity =     1.098(In/Hr)
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      105.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
```

```
Initial area flow distance =   924.000(Ft.)
Top (of initial area) elevation =  1132.000(Ft.)
Bottom (of initial area) elevation =  1091.000(Ft.)
Difference in elevation =    41.000(Ft.)
Slope =    0.04437  s(percent)=       4.44
TC = k(1.123)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   32.150 min.
Rainfall intensity =      1.155(In/Hr) for a    10.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.418
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  50.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      3.880(CFS)
Total initial stream area =        8.040(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      106.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1091.000(Ft.)
End of natural channel elevation =   1038.000(Ft.)
Length of natural channel  =  1360.000(Ft.)
Estimated mean flow rate at midpoint of channel =      6.980(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   4.51(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0390
Corrected/adjusted channel slope =  0.0390
Travel time =    5.02 min.     TC =   37.17  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.404
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  50.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.085(In/Hr) for a    10.0 year storm
Subarea runoff =      5.631(CFS) for     12.850(Ac.)
Total runoff =      9.510(CFS)   Total area =      20.890(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      106.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =     20.890(Ac.)
```

```
Runoff from this stream =      9.510(CFS)
Time of concentration =   37.17 min.
Rainfall intensity =     1.085(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       10.071     17.89           1.486
2        6.627     36.16           1.098
3        9.510     37.17           1.085
Largest stream flow has longer or shorter time of concentration
Qp =     10.071 + sum of
         Qa          Tb/Ta
          6.627 *    0.495 =      3.278
         Qa          Tb/Ta
          9.510 *    0.481 =      4.576
Qp =     17.925

Total of 3 main streams to confluence:
Flow rates before confluence point:
      10.071       6.627       9.510
Area of streams before confluence:
        8.680       13.900       20.890


Results of confluence:
Total flow rate =     17.925(CFS)
Time of concentration =    17.886 min.
Effective stream area after confluence  =     43.470(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      109.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1038.000(Ft.)
End of natural channel elevation =    958.000(Ft.)
Length of natural channel  =  2128.000(Ft.)
Estimated mean flow rate at midpoint of channel =     23.380(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   6.06(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0376
Corrected/adjusted channel slope =  0.0376
Travel time =    5.85 min.     TC =   23.74  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.655
Decimal fraction soil group A = 0.240
Decimal fraction soil group B = 0.220
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.540
RI index for soil(AMC 2)  =  73.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
```

```
Rainfall intensity =      1.316(In/Hr) for a    10.0 year storm
Subarea runoff =     22.796(CFS) for     26.460(Ac.)
Total runoff =     40.721(CFS)   Total area =      69.930(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      109.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     69.930(Ac.)
Runoff from this stream =     40.721(CFS)
Time of concentration =   23.74 min.
Rainfall intensity =     1.316(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      108.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
Initial area flow distance =   981.000(Ft.)
Top (of initial area) elevation =  1072.000(Ft.)
Bottom (of initial area) elevation =  1033.000(Ft.)
Difference in elevation =    39.000(Ft.)
Slope =    0.03976  s(percent)=       3.98
TC = k(1.123)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   33.660 min.
Rainfall intensity =      1.132(In/Hr) for a    10.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.413
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  50.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      2.935(CFS)
Total initial stream area =        6.270(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      109.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of natural channel elevation =   1033.000(Ft.)
End of natural channel elevation =    958.000(Ft.)
Length of natural channel  =  2180.000(Ft.)
Estimated mean flow rate at midpoint of channel =      5.720(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   4.04(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0344
Corrected/adjusted channel slope =  0.0344
Travel time =    8.99 min.     TC =   42.65  min.
```

```
 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.394
Decimal fraction soil group A = 0.980
Decimal fraction soil group B = 0.020
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  50.00
Pervious area fraction =  0.993; Impervious fraction =  0.007
Rainfall intensity =      1.023(In/Hr) for a    10.0 year storm
Subarea runoff =      4.799(CFS) for     11.900(Ac.)
Total runoff =      7.734(CFS)   Total area =      18.170(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      109.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     18.170(Ac.)
Runoff from this stream =      7.734(CFS)
Time of concentration =   42.65 min.
Rainfall intensity =     1.023(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       40.721     23.74           1.316
2        7.734     42.65           1.023
Largest stream flow has longer or shorter time of concentration
Qp =     40.721 + sum of
         Qa          Tb/Ta
          7.734 *    0.557 =      4.304
Qp =     45.025

Total of 2 main streams to confluence:
Flow rates before confluence point:
      40.721       7.734
Area of streams before confluence:
       69.930       18.170


Results of confluence:
Total flow rate =     45.025(CFS)
Time of concentration =    23.737 min.
Effective stream area after confluence  =     88.100(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      110.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =    958.000(Ft.)
End of natural channel elevation =    920.000(Ft.)
Length of natural channel  =  1377.000(Ft.)
Estimated mean flow rate at midpoint of channel =     49.471(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
```

```
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   6.41(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
      Normal channel slope =  0.0276
Corrected/adjusted channel slope =  0.0276
Travel time =    3.58 min.     TC =   27.32  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.533
Decimal fraction soil group A = 0.670
Decimal fraction soil group B = 0.040
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.290
RI index for soil(AMC 2)  =  61.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.239(In/Hr) for a    10.0 year storm
Subarea runoff =     11.492(CFS) for     17.400(Ac.)
Total runoff =     56.517(CFS)   Total area =     105.500(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      110.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =    105.500(Ac.)
Runoff from this stream =     56.517(CFS)
Time of concentration =   27.32 min.
Rainfall intensity =     1.239(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       56.517     27.32           1.239
Largest stream flow has longer time of concentration
Qp =     56.517 + sum of
Qp =     56.517

Total of 1 main streams to confluence:
Flow rates before confluence point:
      56.517
Area of streams before confluence:
      105.500


Results of confluence:
Total flow rate =     56.517(CFS)
Time of concentration =    27.318 min.
Effective stream area after confluence  =    105.500(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      112.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   921.000(Ft.)
```

```
Top (of initial area) elevation =  1095.000(Ft.)
Bottom (of initial area) elevation =  1058.000(Ft.)
Difference in elevation =    37.000(Ft.)
Slope =    0.04017  s(percent)=       4.02
TC = k(1.123)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   32.753 min.
Rainfall intensity =      1.146(In/Hr) for a    10.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.416
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  50.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      2.502(CFS)
Total initial stream area =        5.250(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      112.000 to Point/Station      113.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1058.000(Ft.)
End of natural channel elevation =   1015.000(Ft.)
Length of natural channel  =  1231.000(Ft.)
Estimated mean flow rate at midpoint of channel =      6.337(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   4.17(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0349
Corrected/adjusted channel slope =  0.0349
Travel time =    4.92 min.     TC =   37.67  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.403
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  50.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.079(In/Hr) for a    10.0 year storm
Subarea runoff =      6.988(CFS) for     16.090(Ac.)
Total runoff =      9.491(CFS)   Total area =      21.340(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      113.000 to Point/Station      114.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1015.000(Ft.)
End of natural channel elevation =    967.000(Ft.)
Length of natural channel  =  1401.000(Ft.)
Estimated mean flow rate at midpoint of channel =     13.863(CFS)
```

```
Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   5.03(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0343
Corrected/adjusted channel slope =  0.0343
Travel time =    4.64 min.     TC =   42.31  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.464
Decimal fraction soil group A = 0.560
Decimal fraction soil group B = 0.440
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  58.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.026(In/Hr) for a    10.0 year storm
Subarea runoff =      9.358(CFS) for     19.660(Ac.)
Total runoff =     18.849(CFS)   Total area =      41.000(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      114.000 to Point/Station      117.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =    965.000(Ft.)
End of natural channel elevation =    897.000(Ft.)
Length of natural channel  =  2203.000(Ft.)
Estimated mean flow rate at midpoint of channel =     24.251(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   5.55(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0309
Corrected/adjusted channel slope =  0.0309
Travel time =    6.62 min.     TC =   48.93  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.468
Decimal fraction soil group A = 0.520
Decimal fraction soil group B = 0.410
Decimal fraction soil group C = 0.040
Decimal fraction soil group D = 0.030
RI index for soil(AMC 2)  =  60.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      0.964(In/Hr) for a    10.0 year storm
Subarea runoff =     10.611(CFS) for     23.500(Ac.)
Total runoff =     29.460(CFS)   Total area =      64.500(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

```
Process from Point/Station      114.000 to Point/Station      117.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     64.500(Ac.)
Runoff from this stream =     29.460(CFS)
Time of concentration =   48.93 min.
Rainfall intensity =     0.964(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      115.000 to Point/Station      116.000
**** INITIAL AREA EVALUATION ****
--------------------------------------------------------------------------------
Initial area flow distance =   947.000(Ft.)
Top (of initial area) elevation =   992.000(Ft.)
Bottom (of initial area) elevation =   959.000(Ft.)
Difference in elevation =    33.000(Ft.)
Slope =    0.03485  s(percent)=       3.48
TC = k(0.763)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   23.140 min.
Rainfall intensity =      1.330(In/Hr) for a    10.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.612
Decimal fraction soil group A = 0.060
Decimal fraction soil group B = 0.940
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  68.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      5.696(CFS)
Total initial stream area =        7.000(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      116.000 to Point/Station      117.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
--------------------------------------------------------------------------------
Top of natural channel elevation =    959.000(Ft.)
End of natural channel elevation =    897.000(Ft.)
Length of natural channel  =  2444.000(Ft.)
Estimated mean flow rate at midpoint of channel =     22.608(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   4.93(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0254
Corrected/adjusted channel slope =  0.0254
Travel time =    8.26 min.     TC =   31.40  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.492
Decimal fraction soil group A = 0.560
Decimal fraction soil group B = 0.440
```

```
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  58.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.167(In/Hr) for a    10.0 year storm
Subarea runoff =     23.890(CFS) for     41.570(Ac.)
Total runoff =     29.585(CFS)   Total area =      48.570(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      116.000 to Point/Station      117.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     48.570(Ac.)
Runoff from this stream =     29.585(CFS)
Time of concentration =   31.40 min.
Rainfall intensity =     1.167(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       29.460     48.93           0.964
2       29.585     31.40           1.167
Largest stream flow has longer or shorter time of concentration
Qp =     29.585 + sum of
         Qa          Tb/Ta
         29.460 *    0.642 =     18.903
Qp =     48.489

Total of 2 main streams to confluence:
Flow rates before confluence point:
      29.460      29.585
Area of streams before confluence:
       64.500       48.570


Results of confluence:
Total flow rate =     48.489(CFS)
Time of concentration =    31.396 min.
Effective stream area after confluence  =    113.070(Ac.)
End of computations, total study area =          218.57 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  58.8
```

APPENDIX A.3: AREA “A” - EXISTING CONDITION
2 – YEAR RATIONAL TABLING CALCULATIONS

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 06/01/15 File:AEX2.out

TRACT NO. 36294
AREA A
2YR - EXISTING CONDITION
FN: AEX2

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6268

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 2.00 Antecedent Moisture Condition = 1

2 year, 1 hour precipitation = 0.550(In.)
100 year, 1 hour precipitation = 1.360(In.)

Storm event year = 2.0
Calculated rainfall intensity data:
1 hour intensity = 0.550(In/Hr)
Slope of intensity duration curve = 0.4300

++

Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 993.000(Ft.)
Top (of initial area) elevation = 1218.000(Ft.)
Bottom (of initial area) elevation = 1096.000(Ft.)
Difference in elevation = 122.000(Ft.)
Slope = 0.12286 s(percent)= 12.29
TC = k(0.541)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.994 min.
Rainfall intensity = 1.062(In/Hr) for a 2.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.572
Decimal fraction soil group A = 0.010
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.990
RI index for soil(AMC 1) = 68.60
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 1.821(CFS)
Total initial stream area = 3.000(Ac.)
Pervious area fraction = 1.000

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      106.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1096.000(Ft.)
End of natural channel elevation =   1038.000(Ft.)
Length of natural channel  =  1402.000(Ft.)
Estimated mean flow rate at midpoint of channel =      3.544(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   3.96(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0414
Corrected/adjusted channel slope =  0.0414
Travel time =    5.89 min.     TC =   18.89  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.459
Decimal fraction soil group A = 0.180
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.820
RI index for soil(AMC 1)  =  60.60
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      0.904(In/Hr) for a     2.0 year storm
Subarea runoff =      2.359(CFS) for      5.680(Ac.)
Total runoff =      4.180(CFS)   Total area =       8.680(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      106.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      8.680(Ac.)
Runoff from this stream =      4.180(CFS)
Time of concentration =   18.89 min.
Rainfall intensity =     0.904(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   991.000(Ft.)
Top (of initial area) elevation =  1139.000(Ft.)
Bottom (of initial area) elevation =  1093.000(Ft.)
Difference in elevation =    46.000(Ft.)
Slope =    0.04642  s(percent)=       4.64
TC = k(1.076)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   31.387 min.
Rainfall intensity =      0.727(In/Hr) for a     2.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.188
```

```
Decimal fraction soil group A = 0.960
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.040
RI index for soil(AMC 1)  =  32.60
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      0.890(CFS)
Total initial stream area =        6.520(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      106.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1093.000(Ft.)
End of natural channel elevation =   1038.000(Ft.)
Length of natural channel  =  1270.000(Ft.)
Estimated mean flow rate at midpoint of channel =      1.393(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   3.33(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0433
Corrected/adjusted channel slope =  0.0433
Travel time =    6.36 min.     TC =   37.75  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.166
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  31.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      0.671(In/Hr) for a     2.0 year storm
Subarea runoff =      0.822(CFS) for      7.380(Ac.)
Total runoff =      1.712(CFS)   Total area =      13.900(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      106.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     13.900(Ac.)
Runoff from this stream =      1.712(CFS)
Time of concentration =   37.75 min.
Rainfall intensity =     0.671(In/Hr)
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      105.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
```

```
Initial area flow distance =   924.000(Ft.)
Top (of initial area) elevation =  1132.000(Ft.)
Bottom (of initial area) elevation =  1091.000(Ft.)
Difference in elevation =    41.000(Ft.)
Slope =    0.04437  s(percent)=       4.44
TC = k(1.123)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   32.150 min.
Rainfall intensity =      0.719(In/Hr) for a     2.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.176
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  31.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      1.015(CFS)
Total initial stream area =        8.040(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      106.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1091.000(Ft.)
End of natural channel elevation =   1038.000(Ft.)
Length of natural channel  =  1360.000(Ft.)
Estimated mean flow rate at midpoint of channel =      1.827(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   3.33(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0390
Corrected/adjusted channel slope =  0.0390
Travel time =    6.80 min.     TC =   38.95  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.164
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  31.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      0.662(In/Hr) for a     2.0 year storm
Subarea runoff =      1.398(CFS) for     12.850(Ac.)
Total runoff =      2.413(CFS)   Total area =      20.890(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      106.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =     20.890(Ac.)
```

```
Runoff from this stream =      2.413(CFS)
Time of concentration =   38.95 min.
Rainfall intensity =     0.662(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        4.180     18.89           0.904
2        1.712     37.75           0.671
3        2.413     38.95           0.662
Largest stream flow has longer or shorter time of concentration
Qp =      4.180 + sum of
         Qa          Tb/Ta
          1.712 *    0.500 =      0.857
         Qa          Tb/Ta
          2.413 *    0.485 =      1.170
Qp =      6.207

Total of 3 main streams to confluence:
Flow rates before confluence point:
       4.180       1.712       2.413
Area of streams before confluence:
        8.680       13.900       20.890


Results of confluence:
Total flow rate =      6.207(CFS)
Time of concentration =    18.889 min.
Effective stream area after confluence  =     43.470(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      109.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1038.000(Ft.)
End of natural channel elevation =    958.000(Ft.)
Length of natural channel  =  2128.000(Ft.)
Estimated mean flow rate at midpoint of channel =      8.096(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   4.60(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0376
Corrected/adjusted channel slope =  0.0376
Travel time =    7.72 min.     TC =   26.61  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.372
Decimal fraction soil group A = 0.240
Decimal fraction soil group B = 0.220
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.540
RI index for soil(AMC 1)  =  54.60
Pervious area fraction =  1.000; Impervious fraction =  0.000
```

```
Rainfall intensity =      0.780(In/Hr) for a     2.0 year storm
Subarea runoff =      7.675(CFS) for     26.460(Ac.)
Total runoff =     13.882(CFS)   Total area =      69.930(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      109.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     69.930(Ac.)
Runoff from this stream =     13.882(CFS)
Time of concentration =   26.61 min.
Rainfall intensity =     0.780(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      108.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   981.000(Ft.)
Top (of initial area) elevation =  1072.000(Ft.)
Bottom (of initial area) elevation =  1033.000(Ft.)
Difference in elevation =    39.000(Ft.)
Slope =    0.03976  s(percent)=       3.98
TC = k(1.123)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   33.660 min.
Rainfall intensity =      0.705(In/Hr) for a     2.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.173
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  31.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      0.764(CFS)
Total initial stream area =        6.270(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      109.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1033.000(Ft.)
End of natural channel elevation =    958.000(Ft.)
Length of natural channel  =  2180.000(Ft.)
Estimated mean flow rate at midpoint of channel =      1.489(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   3.01(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0344
Corrected/adjusted channel slope =  0.0344
Travel time =   12.09 min.     TC =   45.75  min.
```

```
 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.160
Decimal fraction soil group A = 0.980
Decimal fraction soil group B = 0.020
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  31.00
Pervious area fraction =  0.993; Impervious fraction =  0.007
Rainfall intensity =      0.618(In/Hr) for a     2.0 year storm
Subarea runoff =      1.179(CFS) for     11.900(Ac.)
Total runoff =      1.943(CFS)   Total area =      18.170(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      109.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     18.170(Ac.)
Runoff from this stream =      1.943(CFS)
Time of concentration =   45.75 min.
Rainfall intensity =     0.618(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       13.882     26.61           0.780
2        1.943     45.75           0.618
Largest stream flow has longer or shorter time of concentration
Qp =     13.882 + sum of
         Qa          Tb/Ta
          1.943 *    0.582 =      1.130
Qp =     15.012

Total of 2 main streams to confluence:
Flow rates before confluence point:
      13.882       1.943
Area of streams before confluence:
       69.930       18.170


Results of confluence:
Total flow rate =     15.012(CFS)
Time of concentration =    26.607 min.
Effective stream area after confluence  =     88.100(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      110.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =    958.000(Ft.)
End of natural channel elevation =    920.000(Ft.)
Length of natural channel  =  1377.000(Ft.)
Estimated mean flow rate at midpoint of channel =     16.494(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
```

```
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   4.73(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
      Normal channel slope =  0.0276
Corrected/adjusted channel slope =  0.0276
Travel time =    4.85 min.     TC =   31.46  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.247
Decimal fraction soil group A = 0.670
Decimal fraction soil group B = 0.040
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.290
RI index for soil(AMC 1)  =  41.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      0.726(In/Hr) for a     2.0 year storm
Subarea runoff =      3.121(CFS) for     17.400(Ac.)
Total runoff =     18.133(CFS)   Total area =     105.500(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      110.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =    105.500(Ac.)
Runoff from this stream =     18.133(CFS)
Time of concentration =   31.46 min.
Rainfall intensity =     0.726(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       18.133     31.46           0.726
Largest stream flow has longer time of concentration
Qp =     18.133 + sum of
Qp =     18.133

Total of 1 main streams to confluence:
Flow rates before confluence point:
      18.133
Area of streams before confluence:
      105.500


Results of confluence:
Total flow rate =     18.133(CFS)
Time of concentration =    31.461 min.
Effective stream area after confluence  =    105.500(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      112.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   921.000(Ft.)
```

```
Top (of initial area) elevation =  1095.000(Ft.)
Bottom (of initial area) elevation =  1058.000(Ft.)
Difference in elevation =    37.000(Ft.)
Slope =    0.04017  s(percent)=       4.02
TC = k(1.123)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   32.753 min.
Rainfall intensity =      0.714(In/Hr) for a     2.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.174
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  31.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      0.653(CFS)
Total initial stream area =        5.250(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      112.000 to Point/Station      113.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1058.000(Ft.)
End of natural channel elevation =   1015.000(Ft.)
Length of natural channel  =  1231.000(Ft.)
Estimated mean flow rate at midpoint of channel =      1.655(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   3.09(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0349
Corrected/adjusted channel slope =  0.0349
Travel time =    6.63 min.     TC =   39.38  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.164
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  31.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      0.659(In/Hr) for a     2.0 year storm
Subarea runoff =      1.735(CFS) for     16.090(Ac.)
Total runoff =      2.388(CFS)   Total area =      21.340(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      113.000 to Point/Station      114.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1015.000(Ft.)
End of natural channel elevation =    967.000(Ft.)
Length of natural channel  =  1401.000(Ft.)
Estimated mean flow rate at midpoint of channel =      3.488(CFS)
```

```
Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   3.59(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0343
Corrected/adjusted channel slope =  0.0343
Travel time =    6.50 min.     TC =   45.88  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.199
Decimal fraction soil group A = 0.560
Decimal fraction soil group B = 0.440
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  38.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      0.617(In/Hr) for a     2.0 year storm
Subarea runoff =      2.414(CFS) for     19.660(Ac.)
Total runoff =      4.802(CFS)   Total area =      41.000(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      114.000 to Point/Station      117.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =    965.000(Ft.)
End of natural channel elevation =    897.000(Ft.)
Length of natural channel  =  2203.000(Ft.)
Estimated mean flow rate at midpoint of channel =      6.178(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   3.90(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0309
Corrected/adjusted channel slope =  0.0309
Travel time =    9.42 min.     TC =   55.30  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.200
Decimal fraction soil group A = 0.520
Decimal fraction soil group B = 0.410
Decimal fraction soil group C = 0.040
Decimal fraction soil group D = 0.030
RI index for soil(AMC 1)  =  40.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      0.570(In/Hr) for a     2.0 year storm
Subarea runoff =      2.671(CFS) for     23.500(Ac.)
Total runoff =      7.473(CFS)   Total area =      64.500(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

```
Process from Point/Station      114.000 to Point/Station      117.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     64.500(Ac.)
Runoff from this stream =      7.473(CFS)
Time of concentration =   55.30 min.
Rainfall intensity =     0.570(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      115.000 to Point/Station      116.000
**** INITIAL AREA EVALUATION ****
--------------------------------------------------------------------------------
Initial area flow distance =   947.000(Ft.)
Top (of initial area) elevation =   992.000(Ft.)
Bottom (of initial area) elevation =   959.000(Ft.)
Difference in elevation =    33.000(Ft.)
Slope =    0.03485  s(percent)=       3.48
TC = k(0.763)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   23.140 min.
Rainfall intensity =      0.828(In/Hr) for a     2.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.333
Decimal fraction soil group A = 0.060
Decimal fraction soil group B = 0.940
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  48.60
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      1.932(CFS)
Total initial stream area =        7.000(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      116.000 to Point/Station      117.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
--------------------------------------------------------------------------------
Top of natural channel elevation =    959.000(Ft.)
End of natural channel elevation =    897.000(Ft.)
Length of natural channel  =  2444.000(Ft.)
Estimated mean flow rate at midpoint of channel =      7.667(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   3.72(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0254
Corrected/adjusted channel slope =  0.0254
Travel time =   10.94 min.     TC =   34.08  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.219
Decimal fraction soil group A = 0.560
Decimal fraction soil group B = 0.440
```

```
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  38.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      0.701(In/Hr) for a     2.0 year storm
Subarea runoff =      6.399(CFS) for     41.570(Ac.)
Total runoff =      8.331(CFS)   Total area =      48.570(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      116.000 to Point/Station      117.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     48.570(Ac.)
Runoff from this stream =      8.331(CFS)
Time of concentration =   34.08 min.
Rainfall intensity =     0.701(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        7.473     55.30           0.570
2        8.331     34.08           0.701
Largest stream flow has longer or shorter time of concentration
Qp =      8.331 + sum of
         Qa          Tb/Ta
          7.473 *    0.616 =      4.605
Qp =     12.936

Total of 2 main streams to confluence:
Flow rates before confluence point:
       7.473       8.331
Area of streams before confluence:
       64.500       48.570


Results of confluence:
Total flow rate =     12.936(CFS)
Time of concentration =    34.076 min.
Effective stream area after confluence  =    113.070(Ac.)
End of computations, total study area =          218.57 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  58.8
```

APPENDIX C: HYDROLOGY CALCULATIONS BASED ON EXISTING CONDITION FOR AREA “B” (RATIONAL TABLING METHOD)

APPENDIX C.1: AREA “B” – EXISTING CONDITION
100 – YEAR RATIONAL TABLING CONDITIONS

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 06/01/15 File:BEX100.out

TRACT NO. 36294
AREA B + OFF-SITE AREAS
100YR - EXISTING CONDITION
FN: BEX100

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6268

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

2 year, 1 hour precipitation = 0.550(In.)
100 year, 1 hour precipitation = 1.360(In.)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.360(In/Hr)
Slope of intensity duration curve = 0.4300

++

Process from Point/Station 200.000 to Point/Station 201.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 805.000(Ft.)
Top (of initial area) elevation = 1005.000(Ft.)
Bottom (of initial area) elevation = 978.000(Ft.)
Difference in elevation = 27.000(Ft.)
Slope = 0.03354 s(percent)= 3.35
TC = k(0.700)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 20.050 min.
Rainfall intensity = 2.179(In/Hr) for a 100.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.727
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.820
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.180
RI index for soil(AMC 2) = 72.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 6.004(CFS)
Total initial stream area = 3.790(Ac.)
Pervious area fraction = 1.000

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      204.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------
Top of natural channel elevation =    978.000(Ft.)
End of natural channel elevation =    937.000(Ft.)
Length of natural channel  =   749.000(Ft.)
Estimated mean flow rate at midpoint of channel =     13.314(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   6.29(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0547
Corrected/adjusted channel slope =  0.0547
Travel time =    1.98 min.     TC =   22.03  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.714
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.880
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.120
RI index for soil(AMC 2)  =  71.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.092(In/Hr) for a   100.0 year storm
Subarea runoff =     13.791(CFS) for      9.230(Ac.)
Total runoff =     19.794(CFS)   Total area =      13.020(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      204.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     13.020(Ac.)
Runoff from this stream =     19.794(CFS)
Time of concentration =   22.03 min.
Rainfall intensity =     2.092(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      203.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------
Initial area flow distance =   565.000(Ft.)
Top (of initial area) elevation =   987.000(Ft.)
Bottom (of initial area) elevation =   958.000(Ft.)
Difference in elevation =    29.000(Ft.)
Slope =    0.05133  s(percent)=       5.13
TC = k(0.685)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   15.643 min.
Rainfall intensity =      2.424(In/Hr) for a   100.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.748
```

```
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.650
Decimal fraction soil group C = 0.350
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  73.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      6.328(CFS)
Total initial stream area =        3.490(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      204.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =    958.000(Ft.)
End of natural channel elevation =    937.000(Ft.)
Length of natural channel  =   770.000(Ft.)
Estimated mean flow rate at midpoint of channel =     11.459(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   4.27(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0273
Corrected/adjusted channel slope =  0.0273
Travel time =    3.00 min.     TC =   18.65  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.724
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.770
Decimal fraction soil group C = 0.230
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  71.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.248(In/Hr) for a   100.0 year storm
Subarea runoff =      9.218(CFS) for      5.660(Ac.)
Total runoff =     15.546(CFS)   Total area =       9.150(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      204.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      9.150(Ac.)
Runoff from this stream =     15.546(CFS)
Time of concentration =   18.65 min.
Rainfall intensity =     2.248(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       19.794     22.03           2.092
```

```
2       15.546     18.65            2.248
Largest stream flow has longer time of concentration
Qp =     19.794 + sum of
         Qb          Ia/Ib
         15.546 *    0.931 =     14.469
Qp =     34.263

Total of 2 main streams to confluence:
Flow rates before confluence point:
      19.794      15.546
Area of streams before confluence:
       13.020        9.150


Results of confluence:
Total flow rate =     34.263(CFS)
Time of concentration =    22.033 min.
Effective stream area after confluence  =     22.170(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      206.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   820.000(Ft.)
Top (of initial area) elevation =  1090.000(Ft.)
Bottom (of initial area) elevation =  1000.000(Ft.)
Difference in elevation =    90.000(Ft.)
Slope =    0.10976  s(percent)=      10.98
TC = k(-0.964)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      3.959(In/Hr) for a   100.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.835
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.720
Decimal fraction soil group D = 0.280
RI index for soil(AMC 2)  =  80.00
Pervious area fraction =  0.930; Impervious fraction =  0.070
Initial subarea runoff =     19.901(CFS)
Total initial stream area =        6.020(Ac.)
Pervious area fraction = 0.930


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      206.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      6.020(Ac.)
Runoff from this stream =     19.901(CFS)
Time of concentration =    5.00 min.
Rainfall intensity =     3.959(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)
```

```
1       19.901      5.00            3.959
Largest stream flow has longer time of concentration
Qp =     19.901 + sum of
Qp =     19.901

Total of 1 main streams to confluence:
Flow rates before confluence point:
      19.901
Area of streams before confluence:
        6.020


Results of confluence:
Total flow rate =     19.901(CFS)
Time of concentration =     5.000 min.
Effective stream area after confluence  =      6.020(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      207.000 to Point/Station      208.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   516.000(Ft.)
Top (of initial area) elevation =  1093.000(Ft.)
Bottom (of initial area) elevation =  1018.000(Ft.)
Difference in elevation =    75.000(Ft.)
Slope =    0.14535  s(percent)=      14.53
TC = k(-1.054)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      3.959(In/Hr) for a   100.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.832
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  80.00
Pervious area fraction =  0.980; Impervious fraction =  0.020
Initial subarea runoff =      6.584(CFS)
Total initial stream area =        2.000(Ac.)
Pervious area fraction = 0.980


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      209.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1018.000(Ft.)
End of natural channel elevation =    951.000(Ft.)
Length of natural channel  =   637.000(Ft.)
Estimated mean flow rate at midpoint of channel =     19.752(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   9.69(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.1052
Corrected/adjusted channel slope =  0.1052
```

```
Travel time =    1.10 min.     TC =    6.10  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.822
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.060
Decimal fraction soil group C = 0.940
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  78.00
Pervious area fraction =  0.920; Impervious fraction =  0.080
Rainfall intensity =      3.636(In/Hr) for a   100.0 year storm
Subarea runoff =     23.918(CFS) for      8.000(Ac.)
Total runoff =     30.502(CFS)   Total area =      10.000(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      209.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     10.000(Ac.)
Runoff from this stream =     30.502(CFS)
Time of concentration =    6.10 min.
Rainfall intensity =     3.636(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       30.502      6.10            3.636
Largest stream flow has longer time of concentration
Qp =     30.502 + sum of
Qp =     30.502

Total of 1 main streams to confluence:
Flow rates before confluence point:
      30.502
Area of streams before confluence:
       10.000


Results of confluence:
Total flow rate =     30.502(CFS)
Time of concentration =     6.096 min.
Effective stream area after confluence  =     10.000(Ac.)
End of computations, total study area =           38.19 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.971
Area averaged RI index number =  74.6
```

APPENDIX C.2: AREA “B” – EXISTING CONDITION
10 – YEAR RATIONAL TABLING CALCULATIONS

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 06/01/15 File:BEX10.out

TRACT NO. 36294
AREA B + OFF-SITE AREAS
10YR - EXISTING CONDITION
FN: BEX10

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6268

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

2 year, 1 hour precipitation = 0.550(In.)
100 year, 1 hour precipitation = 1.360(In.)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.883(In/Hr)
Slope of intensity duration curve = 0.4300

++

Process from Point/Station 200.000 to Point/Station 201.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 805.000(Ft.)
Top (of initial area) elevation = 1005.000(Ft.)
Bottom (of initial area) elevation = 978.000(Ft.)
Difference in elevation = 27.000(Ft.)
Slope = 0.03354 s(percent)= 3.35
TC = k(0.700)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 20.050 min.
Rainfall intensity = 1.415(In/Hr) for a 10.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.659
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.820
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.180
RI index for soil(AMC 2) = 72.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 3.532(CFS)
Total initial stream area = 3.790(Ac.)
Pervious area fraction = 1.000

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      204.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------
Top of natural channel elevation =    978.000(Ft.)
End of natural channel elevation =    937.000(Ft.)
Length of natural channel  =   749.000(Ft.)
Estimated mean flow rate at midpoint of channel =      7.834(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   5.50(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0547
Corrected/adjusted channel slope =  0.0547
Travel time =    2.27 min.     TC =   22.32  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.641
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.880
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.120
RI index for soil(AMC 2)  =  71.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.351(In/Hr) for a    10.0 year storm
Subarea runoff =      8.001(CFS) for      9.230(Ac.)
Total runoff =     11.533(CFS)   Total area =      13.020(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      204.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     13.020(Ac.)
Runoff from this stream =     11.533(CFS)
Time of concentration =   22.32 min.
Rainfall intensity =     1.351(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      203.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------
Initial area flow distance =   565.000(Ft.)
Top (of initial area) elevation =   987.000(Ft.)
Bottom (of initial area) elevation =   958.000(Ft.)
Difference in elevation =    29.000(Ft.)
Slope =    0.05133  s(percent)=       5.13
TC = k(0.685)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   15.643 min.
Rainfall intensity =      1.574(In/Hr) for a    10.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.685
```

```
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.650
Decimal fraction soil group C = 0.350
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  73.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      3.766(CFS)
Total initial stream area =        3.490(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      204.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =    958.000(Ft.)
End of natural channel elevation =    937.000(Ft.)
Length of natural channel  =   770.000(Ft.)
Estimated mean flow rate at midpoint of channel =      6.819(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   3.75(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0273
Corrected/adjusted channel slope =  0.0273
Travel time =    3.42 min.     TC =   19.06  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.654
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.770
Decimal fraction soil group C = 0.230
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  71.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.446(In/Hr) for a    10.0 year storm
Subarea runoff =      5.351(CFS) for      5.660(Ac.)
Total runoff =      9.117(CFS)   Total area =       9.150(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      204.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      9.150(Ac.)
Runoff from this stream =      9.117(CFS)
Time of concentration =   19.06 min.
Rainfall intensity =     1.446(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       11.533     22.32           1.351
```

```
2        9.117     19.06            1.446
Largest stream flow has longer time of concentration
Qp =     11.533 + sum of
         Qb          Ia/Ib
          9.117 *    0.934 =      8.519
Qp =     20.052

Total of 2 main streams to confluence:
Flow rates before confluence point:
      11.533       9.117
Area of streams before confluence:
       13.020        9.150


Results of confluence:
Total flow rate =     20.052(CFS)
Time of concentration =    22.319 min.
Effective stream area after confluence  =     22.170(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      206.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   820.000(Ft.)
Top (of initial area) elevation =  1090.000(Ft.)
Bottom (of initial area) elevation =  1000.000(Ft.)
Difference in elevation =    90.000(Ft.)
Slope =    0.10976  s(percent)=      10.98
TC = k(-0.964)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      2.571(In/Hr) for a    10.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.804
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.720
Decimal fraction soil group D = 0.280
RI index for soil(AMC 2)  =  80.00
Pervious area fraction =  0.930; Impervious fraction =  0.070
Initial subarea runoff =     12.444(CFS)
Total initial stream area =        6.020(Ac.)
Pervious area fraction = 0.930


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      206.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      6.020(Ac.)
Runoff from this stream =     12.444(CFS)
Time of concentration =    5.00 min.
Rainfall intensity =     2.571(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)
```

```
1       12.444      5.00            2.571
Largest stream flow has longer time of concentration
Qp =     12.444 + sum of
Qp =     12.444

Total of 1 main streams to confluence:
Flow rates before confluence point:
      12.444
Area of streams before confluence:
        6.020


Results of confluence:
Total flow rate =     12.444(CFS)
Time of concentration =     5.000 min.
Effective stream area after confluence  =      6.020(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      207.000 to Point/Station      208.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   516.000(Ft.)
Top (of initial area) elevation =  1093.000(Ft.)
Bottom (of initial area) elevation =  1018.000(Ft.)
Difference in elevation =    75.000(Ft.)
Slope =    0.14535  s(percent)=      14.53
TC = k(-1.054)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      2.571(In/Hr) for a    10.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.799
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 2)  =  80.00
Pervious area fraction =  0.980; Impervious fraction =  0.020
Initial subarea runoff =      4.108(CFS)
Total initial stream area =        2.000(Ac.)
Pervious area fraction = 0.980


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      209.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1018.000(Ft.)
End of natural channel elevation =    951.000(Ft.)
Length of natural channel  =   637.000(Ft.)
Estimated mean flow rate at midpoint of channel =     12.323(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   8.55(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.1052
Corrected/adjusted channel slope =  0.1052
```

```
Travel time =    1.24 min.     TC =    6.24  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.785
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.060
Decimal fraction soil group C = 0.940
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  78.00
Pervious area fraction =  0.920; Impervious fraction =  0.080
Rainfall intensity =      2.337(In/Hr) for a    10.0 year storm
Subarea runoff =     14.682(CFS) for      8.000(Ac.)
Total runoff =     18.790(CFS)   Total area =      10.000(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      209.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     10.000(Ac.)
Runoff from this stream =     18.790(CFS)
Time of concentration =    6.24 min.
Rainfall intensity =     2.337(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       18.790      6.24            2.337
Largest stream flow has longer time of concentration
Qp =     18.790 + sum of
Qp =     18.790

Total of 1 main streams to confluence:
Flow rates before confluence point:
      18.790
Area of streams before confluence:
       10.000


Results of confluence:
Total flow rate =     18.790(CFS)
Time of concentration =     6.242 min.
Effective stream area after confluence  =     10.000(Ac.)
End of computations, total study area =           38.19 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.971
Area averaged RI index number =  74.6
```

APPENDIX C.3: AREA “B” – EXISTING CONDITION
2 – YEAR RATIONAL TABLING CALCULATIONS

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 06/01/15 File:BEX2.out

TRACT NO. 36294
AREA B + OFF-SITE AREAS
2YR - EXISTING CONDITION
FN: BEX2

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6268

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 2.00 Antecedent Moisture Condition = 1

2 year, 1 hour precipitation = 0.550(In.)
100 year, 1 hour precipitation = 1.360(In.)

Storm event year = 2.0
Calculated rainfall intensity data:
1 hour intensity = 0.550(In/Hr)
Slope of intensity duration curve = 0.4300

++

Process from Point/Station 200.000 to Point/Station 201.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 805.000(Ft.)
Top (of initial area) elevation = 1005.000(Ft.)
Bottom (of initial area) elevation = 978.000(Ft.)
Difference in elevation = 27.000(Ft.)
Slope = 0.03354 s(percent)= 3.35
TC = k(0.700)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 20.050 min.
Rainfall intensity = 0.881(In/Hr) for a 2.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.388
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.820
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.180
RI index for soil(AMC 1) = 53.40
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 1.295(CFS)
Total initial stream area = 3.790(Ac.)
Pervious area fraction = 1.000

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      204.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------
Top of natural channel elevation =    978.000(Ft.)
End of natural channel elevation =    937.000(Ft.)
Length of natural channel  =   749.000(Ft.)
Estimated mean flow rate at midpoint of channel =      2.873(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   4.35(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0547
Corrected/adjusted channel slope =  0.0547
Travel time =    2.87 min.     TC =   22.92  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.365
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.880
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.120
RI index for soil(AMC 1)  =  52.20
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      0.832(In/Hr) for a     2.0 year storm
Subarea runoff =      2.801(CFS) for      9.230(Ac.)
Total runoff =      4.096(CFS)   Total area =      13.020(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      204.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     13.020(Ac.)
Runoff from this stream =      4.096(CFS)
Time of concentration =   22.92 min.
Rainfall intensity =     0.832(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      203.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------
Initial area flow distance =   565.000(Ft.)
Top (of initial area) elevation =   987.000(Ft.)
Bottom (of initial area) elevation =   958.000(Ft.)
Difference in elevation =    29.000(Ft.)
Slope =    0.05133  s(percent)=       5.13
TC = k(0.685)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   15.643 min.
Rainfall intensity =      0.980(In/Hr) for a     2.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.422
```

```
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.650
Decimal fraction soil group C = 0.350
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  54.60
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      1.445(CFS)
Total initial stream area =        3.490(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      204.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =    958.000(Ft.)
End of natural channel elevation =    937.000(Ft.)
Length of natural channel  =   770.000(Ft.)
Estimated mean flow rate at midpoint of channel =      2.617(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   3.01(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0273
Corrected/adjusted channel slope =  0.0273
Travel time =    4.26 min.     TC =   19.91  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.378
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.770
Decimal fraction soil group C = 0.230
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  52.20
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      0.884(In/Hr) for a     2.0 year storm
Subarea runoff =      1.891(CFS) for      5.660(Ac.)
Total runoff =      3.336(CFS)   Total area =       9.150(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      204.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      9.150(Ac.)
Runoff from this stream =      3.336(CFS)
Time of concentration =   19.91 min.
Rainfall intensity =     0.884(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        4.096     22.92           0.832
```

```
2        3.336     19.91            0.884
Largest stream flow has longer time of concentration
Qp =      4.096 + sum of
         Qb         Ia/Ib
          3.336 *    0.941 =      3.140
Qp =      7.236

Total of 2 main streams to confluence:
Flow rates before confluence point:
       4.096       3.336
Area of streams before confluence:
       13.020        9.150


Results of confluence:
Total flow rate =      7.236(CFS)
Time of concentration =    22.919 min.
Effective stream area after confluence  =     22.170(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      206.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   820.000(Ft.)
Top (of initial area) elevation =  1090.000(Ft.)
Bottom (of initial area) elevation =  1000.000(Ft.)
Difference in elevation =    90.000(Ft.)
Slope =    0.10976  s(percent)=      10.98
TC = k(-0.964)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      1.601(In/Hr) for a     2.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.625
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.720
Decimal fraction soil group D = 0.280
RI index for soil(AMC 1)  =  63.00
Pervious area fraction =  0.930; Impervious fraction =  0.070
Initial subarea runoff =      6.025(CFS)
Total initial stream area =        6.020(Ac.)
Pervious area fraction = 0.930


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      206.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      6.020(Ac.)
Runoff from this stream =      6.025(CFS)
Time of concentration =    5.00 min.
Rainfall intensity =     1.601(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)
```

```
1        6.025      5.00            1.601
Largest stream flow has longer time of concentration
Qp =      6.025 + sum of
Qp =      6.025

Total of 1 main streams to confluence:
Flow rates before confluence point:
       6.025
Area of streams before confluence:
        6.020


Results of confluence:
Total flow rate =      6.025(CFS)
Time of concentration =     5.000 min.
Effective stream area after confluence  =      6.020(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      207.000 to Point/Station      208.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   516.000(Ft.)
Top (of initial area) elevation =  1093.000(Ft.)
Bottom (of initial area) elevation =  1018.000(Ft.)
Difference in elevation =    75.000(Ft.)
Slope =    0.14535  s(percent)=      14.53
TC = k(-1.054)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      1.601(In/Hr) for a     2.0 year storm
USER INPUT of soil data for subarea
Runoff Coefficient = 0.610
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
RI index for soil(AMC 1)  =  63.00
Pervious area fraction =  0.980; Impervious fraction =  0.020
Initial subarea runoff =      1.954(CFS)
Total initial stream area =        2.000(Ac.)
Pervious area fraction = 0.980


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      209.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1018.000(Ft.)
End of natural channel elevation =    951.000(Ft.)
Length of natural channel  =   637.000(Ft.)
Estimated mean flow rate at midpoint of channel =      5.863(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   7.11(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.1052
Corrected/adjusted channel slope =  0.1052
```

```
Travel time =    1.49 min.     TC =    6.49  min.


 Adding area flow to channel
USER INPUT of soil data for subarea
Runoff Coefficient = 0.588
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.060
Decimal fraction soil group C = 0.940
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  60.60
Pervious area fraction =  0.920; Impervious fraction =  0.080
Rainfall intensity =      1.431(In/Hr) for a     2.0 year storm
Subarea runoff =      6.726(CFS) for      8.000(Ac.)
Total runoff =      8.680(CFS)   Total area =      10.000(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      209.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     10.000(Ac.)
Runoff from this stream =      8.680(CFS)
Time of concentration =    6.49 min.
Rainfall intensity =     1.431(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        8.680      6.49           1.431
Largest stream flow has longer time of concentration
Qp =      8.680 + sum of
Qp =      8.680

Total of 1 main streams to confluence:
Flow rates before confluence point:
       8.680
Area of streams before confluence:
       10.000


Results of confluence:
Total flow rate =      8.680(CFS)
Time of concentration =     6.494 min.
Effective stream area after confluence  =     10.000(Ac.)
End of computations, total study area =           38.19 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.971
Area averaged RI index number =  74.6
```

APPENDIX E: HYDROLOGY CALCULATIONS BASED ON EXISTING CONDITION FOR AREA “A” (HYDROGRAPH METHOD)

APPENDIX E.1: AREA “A” – EXISTING CONDITION HYDROGRAPH CALCULATIONS 100–YEAR

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: AUH10024EXIST24100.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "A"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
100 YEAR - 24 HOUR
FN: AUH10024EXIST

Drainage Area = 218.56(Ac.) = 0.342 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 218.56(Ac.) = 0.342 Sq. Mi.
Length along longest watercourse = 7012.00(Ft.)
Length along longest watercourse measured to centroid = 3373.00(Ft.)
Length along longest watercourse = 1.328 Mi.
Length along longest watercourse measured to centroid = 0.639 Mi.
Difference in elevation = 321.00(Ft.)
Slope along watercourse = 241.7114 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.278 Hr.
Lag time = 16.69 Min.
25% of lag time = 4.17 Min.
40% of lag time = 6.68 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	2.50	546.40

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	8.00	1748.48

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 2.500(In)
Area Averaged 100-Year Rainfall = 8.000(In)

Point rain (area averaged) = 8.000(In)
Areal adjustment factor = 99.96 %
Adjusted average point rain = 7.997(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
218.560	60.00	0.000

Total Area Entered = 218.56(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
60.0	60.0	0.470	0.000	0.470	1.000	0.470
					Sum (F) =	0.470

Area averaged mean soil loss (F) (In/Hr) = 0.470
Minimum soil loss rate ((In/Hr)) = 0.235
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	29.957	2.894	6.376
2	0.167	59.914	10.603	23.355
3	0.250	89.872	18.530	40.817
4	0.333	119.829	20.150	44.385
5	0.417	149.786	12.840	28.283
6	0.500	179.743	7.392	16.282
7	0.583	209.701	4.765	10.495
8	0.667	239.658	3.715	8.183
9	0.750	269.615	2.997	6.601
10	0.833	299.572	2.496	5.499
11	0.917	329.529	1.990	4.383
12	1.000	359.487	1.773	3.906
13	1.083	389.444	1.430	3.150
14	1.167	419.401	1.243	2.737
15	1.250	449.358	0.981	2.161
16	1.333	479.316	0.930	2.048
17	1.417	509.273	0.887	1.954
18	1.500	539.230	0.716	1.578
19	1.583	569.187	0.634	1.398
20	1.667	599.144	0.547	1.205
21	1.750	629.102	0.483	1.063
22	1.833	659.059	0.414	0.912
23	1.917	689.016	0.329	0.724
24	2.000	718.973	0.300	0.660
25	2.083	748.931	0.300	0.660
26	2.167	778.888	0.300	0.660
27	2.250	808.845	0.361	0.795
			Sum = 100.000	Sum= 220.268

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1	0.08	0.07	0.064	(0.833)		0.058	0.006
2	0.17	0.07	0.064	(0.830)		0.058	0.006
3	0.25	0.07	0.064	(0.826)		0.058	0.006
4	0.33	0.10	0.096	(0.823)		0.086	0.010
5	0.42	0.10	0.096	(0.820)		0.086	0.010
6	0.50	0.10	0.096	(0.817)		0.086	0.010
7	0.58	0.10	0.096	(0.814)		0.086	0.010
8	0.67	0.10	0.096	(0.811)		0.086	0.010
9	0.75	0.10	0.096	(0.807)		0.086	0.010
10	0.83	0.13	0.128	(0.804)		0.115	0.013
11	0.92	0.13	0.128	(0.801)		0.115	0.013
12	1.00	0.13	0.128	(0.798)		0.115	0.013
13	1.08	0.10	0.096	(0.795)		0.086	0.010
14	1.17	0.10	0.096	(0.792)		0.086	0.010
15	1.25	0.10	0.096	(0.788)		0.086	0.010
16	1.33	0.10	0.096	(0.785)		0.086	0.010
17	1.42	0.10	0.096	(0.782)		0.086	0.010
18	1.50	0.10	0.096	(0.779)		0.086	0.010
19	1.58	0.10	0.096	(0.776)		0.086	0.010
20	1.67	0.10	0.096	(0.773)		0.086	0.010
21	1.75	0.10	0.096	(0.770)		0.086	0.010
22	1.83	0.13	0.128	(0.767)		0.115	0.013
23	1.92	0.13	0.128	(0.764)		0.115	0.013
24	2.00	0.13	0.128	(0.760)		0.115	0.013
25	2.08	0.13	0.128	(0.757)		0.115	0.013
26	2.17	0.13	0.128	(0.754)		0.115	0.013
27	2.25	0.13	0.128	(0.751)		0.115	0.013
28	2.33	0.13	0.128	(0.748)		0.115	0.013
29	2.42	0.13	0.128	(0.745)		0.115	0.013
30	2.50	0.13	0.128	(0.742)		0.115	0.013
31	2.58	0.17	0.160	(0.739)		0.144	0.016
32	2.67	0.17	0.160	(0.736)		0.144	0.016
33	2.75	0.17	0.160	(0.733)		0.144	0.016
34	2.83	0.17	0.160	(0.730)		0.144	0.016
35	2.92	0.17	0.160	(0.727)		0.144	0.016
36	3.00	0.17	0.160	(0.724)		0.144	0.016
37	3.08	0.17	0.160	(0.721)		0.144	0.016
38	3.17	0.17	0.160	(0.718)		0.144	0.016
39	3.25	0.17	0.160	(0.715)		0.144	0.016
40	3.33	0.17	0.160	(0.712)		0.144	0.016
41	3.42	0.17	0.160	(0.709)		0.144	0.016
42	3.50	0.17	0.160	(0.706)		0.144	0.016
43	3.58	0.17	0.160	(0.703)		0.144	0.016
44	3.67	0.17	0.160	(0.700)		0.144	0.016
45	3.75	0.17	0.160	(0.697)		0.144	0.016
46	3.83	0.20	0.192	(0.694)		0.173	0.019
47	3.92	0.20	0.192	(0.691)		0.173	0.019
48	4.00	0.20	0.192	(0.688)		0.173	0.019
49	4.08	0.20	0.192	(0.685)		0.173	0.019
50	4.17	0.20	0.192	(0.683)		0.173	0.019
51	4.25	0.20	0.192	(0.680)		0.173	0.019
52	4.33	0.23	0.224	(0.677)		0.202	0.022
53	4.42	0.23	0.224	(0.674)		0.202	0.022
54	4.50	0.23	0.224	(0.671)		0.202	0.022
55	4.58	0.23	0.224	(0.668)		0.202	0.022
56	4.67	0.23	0.224	(0.665)		0.202	0.022
57	4.75	0.23	0.224	(0.662)		0.202	0.022
58	4.83	0.27	0.256	(0.659)		0.230	0.026
59	4.92	0.27	0.256	(0.657)		0.230	0.026
60	5.00	0.27	0.256	(0.654)		0.230	0.026
61	5.08	0.20	0.192	(0.651)		0.173	0.019

62	5.17	0.20	0.192	(	0.648)		0.173		0.019
63	5.25	0.20	0.192	(	0.645)		0.173		0.019
64	5.33	0.23	0.224	(	0.642)		0.202		0.022
65	5.42	0.23	0.224	(	0.640)		0.202		0.022
66	5.50	0.23	0.224	(	0.637)		0.202		0.022
67	5.58	0.27	0.256	(	0.634)		0.230		0.026
68	5.67	0.27	0.256	(	0.631)		0.230		0.026
69	5.75	0.27	0.256	(	0.629)		0.230		0.026
70	5.83	0.27	0.256	(	0.626)		0.230		0.026
71	5.92	0.27	0.256	(	0.623)		0.230		0.026
72	6.00	0.27	0.256	(	0.620)		0.230		0.026
73	6.08	0.30	0.288	(	0.617)		0.259		0.029
74	6.17	0.30	0.288	(	0.615)		0.259		0.029
75	6.25	0.30	0.288	(	0.612)		0.259		0.029
76	6.33	0.30	0.288	(	0.609)		0.259		0.029
77	6.42	0.30	0.288	(	0.606)		0.259		0.029
78	6.50	0.30	0.288	(	0.604)		0.259		0.029
79	6.58	0.33	0.320	(	0.601)		0.288		0.032
80	6.67	0.33	0.320	(	0.598)		0.288		0.032
81	6.75	0.33	0.320	(	0.596)		0.288		0.032
82	6.83	0.33	0.320	(	0.593)		0.288		0.032
83	6.92	0.33	0.320	(	0.590)		0.288		0.032
84	7.00	0.33	0.320	(	0.588)		0.288		0.032
85	7.08	0.33	0.320	(	0.585)		0.288		0.032
86	7.17	0.33	0.320	(	0.582)		0.288		0.032
87	7.25	0.33	0.320	(	0.580)		0.288		0.032
88	7.33	0.37	0.352	(	0.577)		0.317		0.035
89	7.42	0.37	0.352	(	0.574)		0.317		0.035
90	7.50	0.37	0.352	(	0.572)		0.317		0.035
91	7.58	0.40	0.384	(	0.569)		0.345		0.038
92	7.67	0.40	0.384	(	0.566)		0.345		0.038
93	7.75	0.40	0.384	(	0.564)		0.345		0.038
94	7.83	0.43	0.416	(	0.561)		0.374		0.042
95	7.92	0.43	0.416	(	0.559)		0.374		0.042
96	8.00	0.43	0.416	(	0.556)		0.374		0.042
97	8.08	0.50	0.480	(	0.553)		0.432		0.048
98	8.17	0.50	0.480	(	0.551)		0.432		0.048
99	8.25	0.50	0.480	(	0.548)		0.432		0.048
100	8.33	0.50	0.480	(	0.546)		0.432		0.048
101	8.42	0.50	0.480	(	0.543)		0.432		0.048
102	8.50	0.50	0.480	(	0.541)		0.432		0.048
103	8.58	0.53	0.512	(	0.538)		0.461		0.051
104	8.67	0.53	0.512	(	0.536)		0.461		0.051
105	8.75	0.53	0.512	(	0.533)		0.461		0.051
106	8.83	0.57	0.544	(	0.531)		0.489		0.054
107	8.92	0.57	0.544	(	0.528)		0.489		0.054
108	9.00	0.57	0.544	(	0.526)		0.489		0.054
109	9.08	0.63	0.608		0.523	(	0.547)		0.085
110	9.17	0.63	0.608		0.521	(	0.547)		0.087
111	9.25	0.63	0.608		0.518	(	0.547)		0.090
112	9.33	0.67	0.640		0.516	(	0.576)		0.124
113	9.42	0.67	0.640		0.513	(	0.576)		0.127
114	9.50	0.67	0.640		0.511	(	0.576)		0.129
115	9.58	0.70	0.672		0.508	(	0.605)		0.163
116	9.67	0.70	0.672		0.506	(	0.605)		0.166
117	9.75	0.70	0.672		0.503	(	0.605)		0.168
118	9.83	0.73	0.704		0.501	(	0.633)		0.203
119	9.92	0.73	0.704		0.499	(	0.633)		0.205
120	10.00	0.73	0.704		0.496	(	0.633)		0.208
121	10.08	0.50	0.480	(	0.494)		0.432		0.048
122	10.17	0.50	0.480	(	0.491)		0.432		0.048
123	10.25	0.50	0.480	(	0.489)		0.432		0.048
124	10.33	0.50	0.480	(	0.487)		0.432		0.048

125	10.42	0.50	0.480	(	0.484)	0.432		0.048
126	10.50	0.50	0.480	(	0.482)	0.432		0.048
127	10.58	0.67	0.640		0.480	(0.576)		0.160
128	10.67	0.67	0.640		0.477	(0.576)		0.163
129	10.75	0.67	0.640		0.475	(0.576)		0.165
130	10.83	0.67	0.640		0.473	(0.576)		0.167
131	10.92	0.67	0.640		0.470	(0.576)		0.170
132	11.00	0.67	0.640		0.468	(0.576)		0.172
133	11.08	0.63	0.608		0.466	(0.547)		0.142
134	11.17	0.63	0.608		0.463	(0.547)		0.144
135	11.25	0.63	0.608		0.461	(0.547)		0.147
136	11.33	0.63	0.608		0.459	(0.547)		0.149
137	11.42	0.63	0.608		0.456	(0.547)		0.151
138	11.50	0.63	0.608		0.454	(0.547)		0.154
139	11.58	0.57	0.544		0.452	(0.489)		0.092
140	11.67	0.57	0.544		0.450	(0.489)		0.094
141	11.75	0.57	0.544		0.447	(0.489)		0.096
142	11.83	0.60	0.576		0.445	(0.518)		0.131
143	11.92	0.60	0.576		0.443	(0.518)		0.133
144	12.00	0.60	0.576		0.441	(0.518)		0.135
145	12.08	0.83	0.800		0.439	(0.720)		0.361
146	12.17	0.83	0.800		0.436	(0.720)		0.363
147	12.25	0.83	0.800		0.434	(0.720)		0.365
148	12.33	0.87	0.832		0.432	(0.748)		0.400
149	12.42	0.87	0.832		0.430	(0.748)		0.402
150	12.50	0.87	0.832		0.428	(0.748)		0.404
151	12.58	0.93	0.896		0.426	(0.806)		0.470
152	12.67	0.93	0.896		0.423	(0.806)		0.472
153	12.75	0.93	0.896		0.421	(0.806)		0.474
154	12.83	0.97	0.928		0.419	(0.835)		0.508
155	12.92	0.97	0.928		0.417	(0.835)		0.511
156	13.00	0.97	0.928		0.415	(0.835)		0.513
157	13.08	1.13	1.088		0.413	(0.979)		0.675
158	13.17	1.13	1.088		0.411	(0.979)		0.677
159	13.25	1.13	1.088		0.409	(0.979)		0.679
160	13.33	1.13	1.088		0.407	(0.979)		0.681
161	13.42	1.13	1.088		0.404	(0.979)		0.683
162	13.50	1.13	1.088		0.402	(0.979)		0.685
163	13.58	0.77	0.736		0.400	(0.662)		0.335
164	13.67	0.77	0.736		0.398	(0.662)		0.337
165	13.75	0.77	0.736		0.396	(0.662)		0.339
166	13.83	0.77	0.736		0.394	(0.662)		0.341
167	13.92	0.77	0.736		0.392	(0.662)		0.343
168	14.00	0.77	0.736		0.390	(0.662)		0.345
169	14.08	0.90	0.864		0.388	(0.777)		0.475
170	14.17	0.90	0.864		0.386	(0.777)		0.477
171	14.25	0.90	0.864		0.384	(0.777)		0.479
172	14.33	0.87	0.832		0.382	(0.748)		0.449
173	14.42	0.87	0.832		0.380	(0.748)		0.451
174	14.50	0.87	0.832		0.378	(0.748)		0.453
175	14.58	0.87	0.832		0.377	(0.748)		0.455
176	14.67	0.87	0.832		0.375	(0.748)		0.457
177	14.75	0.87	0.832		0.373	(0.748)		0.459
178	14.83	0.83	0.800		0.371	(0.720)		0.429
179	14.92	0.83	0.800		0.369	(0.720)		0.431
180	15.00	0.83	0.800		0.367	(0.720)		0.433
181	15.08	0.80	0.768		0.365	(0.691)		0.403
182	15.17	0.80	0.768		0.363	(0.691)		0.404
183	15.25	0.80	0.768		0.361	(0.691)		0.406
184	15.33	0.77	0.736		0.360	(0.662)		0.376
185	15.42	0.77	0.736		0.358	(0.662)		0.378
186	15.50	0.77	0.736		0.356	(0.662)		0.380
187	15.58	0.63	0.608		0.354	(0.547)		0.254

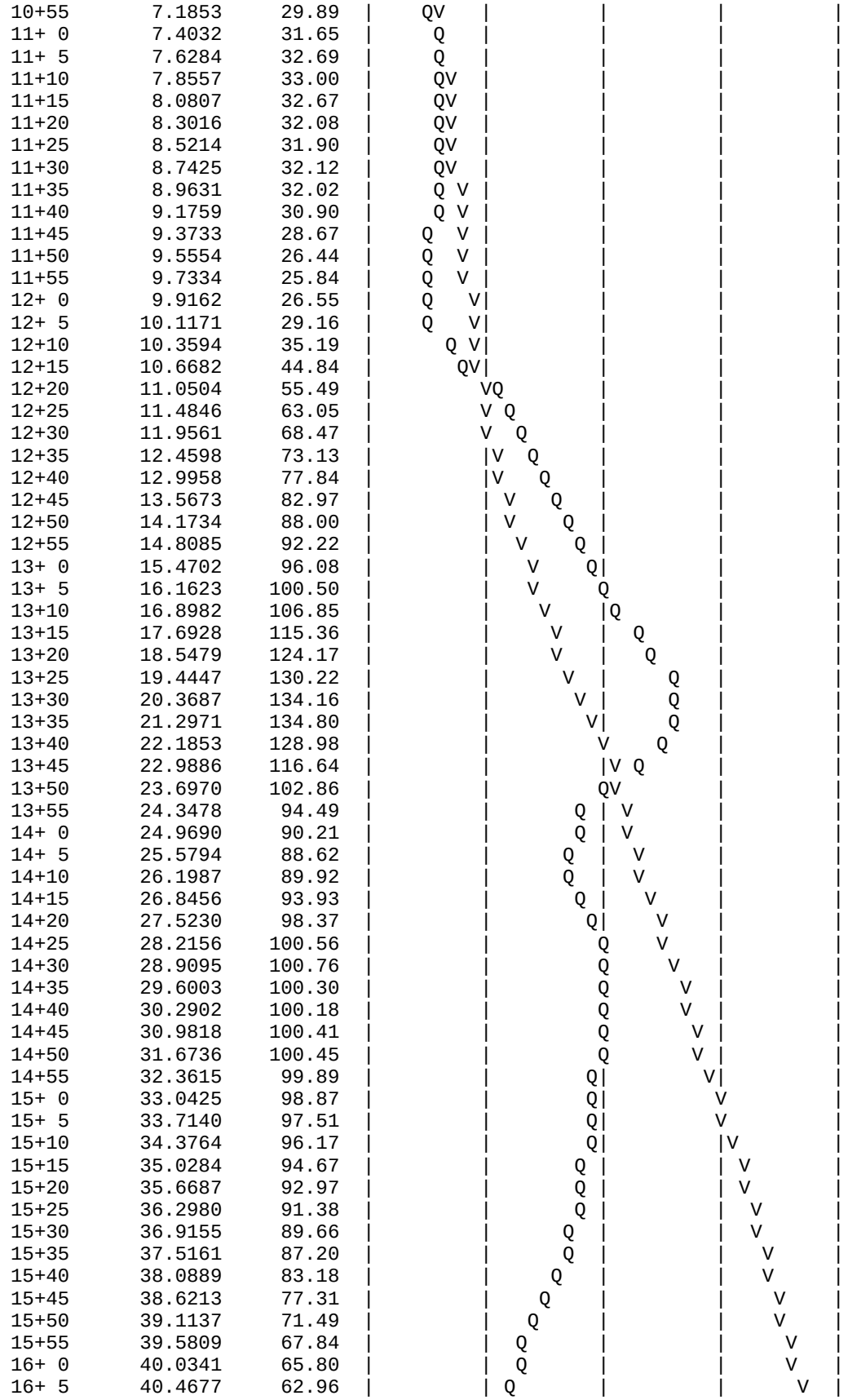
188	15.67	0.63	0.608	0.352	(0.547)	0.256
189	15.75	0.63	0.608	0.350	(0.547)	0.257
190	15.83	0.63	0.608	0.349	(0.547)	0.259
191	15.92	0.63	0.608	0.347	(0.547)	0.261
192	16.00	0.63	0.608	0.345	(0.547)	0.263
193	16.08	0.13	0.128	(0.343)	0.115	0.013
194	16.17	0.13	0.128	(0.342)	0.115	0.013
195	16.25	0.13	0.128	(0.340)	0.115	0.013
196	16.33	0.13	0.128	(0.338)	0.115	0.013
197	16.42	0.13	0.128	(0.336)	0.115	0.013
198	16.50	0.13	0.128	(0.335)	0.115	0.013
199	16.58	0.10	0.096	(0.333)	0.086	0.010
200	16.67	0.10	0.096	(0.331)	0.086	0.010
201	16.75	0.10	0.096	(0.330)	0.086	0.010
202	16.83	0.10	0.096	(0.328)	0.086	0.010
203	16.92	0.10	0.096	(0.326)	0.086	0.010
204	17.00	0.10	0.096	(0.325)	0.086	0.010
205	17.08	0.17	0.160	(0.323)	0.144	0.016
206	17.17	0.17	0.160	(0.321)	0.144	0.016
207	17.25	0.17	0.160	(0.320)	0.144	0.016
208	17.33	0.17	0.160	(0.318)	0.144	0.016
209	17.42	0.17	0.160	(0.316)	0.144	0.016
210	17.50	0.17	0.160	(0.315)	0.144	0.016
211	17.58	0.17	0.160	(0.313)	0.144	0.016
212	17.67	0.17	0.160	(0.312)	0.144	0.016
213	17.75	0.17	0.160	(0.310)	0.144	0.016
214	17.83	0.13	0.128	(0.309)	0.115	0.013
215	17.92	0.13	0.128	(0.307)	0.115	0.013
216	18.00	0.13	0.128	(0.306)	0.115	0.013
217	18.08	0.13	0.128	(0.304)	0.115	0.013
218	18.17	0.13	0.128	(0.303)	0.115	0.013
219	18.25	0.13	0.128	(0.301)	0.115	0.013
220	18.33	0.13	0.128	(0.300)	0.115	0.013
221	18.42	0.13	0.128	(0.298)	0.115	0.013
222	18.50	0.13	0.128	(0.297)	0.115	0.013
223	18.58	0.10	0.096	(0.295)	0.086	0.010
224	18.67	0.10	0.096	(0.294)	0.086	0.010
225	18.75	0.10	0.096	(0.292)	0.086	0.010
226	18.83	0.07	0.064	(0.291)	0.058	0.006
227	18.92	0.07	0.064	(0.290)	0.058	0.006
228	19.00	0.07	0.064	(0.288)	0.058	0.006
229	19.08	0.10	0.096	(0.287)	0.086	0.010
230	19.17	0.10	0.096	(0.286)	0.086	0.010
231	19.25	0.10	0.096	(0.284)	0.086	0.010
232	19.33	0.13	0.128	(0.283)	0.115	0.013
233	19.42	0.13	0.128	(0.282)	0.115	0.013
234	19.50	0.13	0.128	(0.280)	0.115	0.013
235	19.58	0.10	0.096	(0.279)	0.086	0.010
236	19.67	0.10	0.096	(0.278)	0.086	0.010
237	19.75	0.10	0.096	(0.277)	0.086	0.010
238	19.83	0.07	0.064	(0.275)	0.058	0.006
239	19.92	0.07	0.064	(0.274)	0.058	0.006
240	20.00	0.07	0.064	(0.273)	0.058	0.006
241	20.08	0.10	0.096	(0.272)	0.086	0.010
242	20.17	0.10	0.096	(0.270)	0.086	0.010
243	20.25	0.10	0.096	(0.269)	0.086	0.010
244	20.33	0.10	0.096	(0.268)	0.086	0.010
245	20.42	0.10	0.096	(0.267)	0.086	0.010
246	20.50	0.10	0.096	(0.266)	0.086	0.010
247	20.58	0.10	0.096	(0.265)	0.086	0.010
248	20.67	0.10	0.096	(0.264)	0.086	0.010
249	20.75	0.10	0.096	(0.263)	0.086	0.010
250	20.83	0.07	0.064	(0.261)	0.058	0.006

```
251  20.92     0.07      0.064       (  0.260)       0.058        0.006
252  21.00     0.07      0.064       (  0.259)       0.058        0.006
253  21.08     0.10      0.096       (  0.258)       0.086        0.010
254  21.17     0.10      0.096       (  0.257)       0.086        0.010
255  21.25     0.10      0.096       (  0.256)       0.086        0.010
256  21.33     0.07      0.064       (  0.255)       0.058        0.006
257  21.42     0.07      0.064       (  0.254)       0.058        0.006
258  21.50     0.07      0.064       (  0.253)       0.058        0.006
259  21.58     0.10      0.096       (  0.252)       0.086        0.010
260  21.67     0.10      0.096       (  0.252)       0.086        0.010
261  21.75     0.10      0.096       (  0.251)       0.086        0.010
262  21.83     0.07      0.064       (  0.250)       0.058        0.006
263  21.92     0.07      0.064       (  0.249)       0.058        0.006
264  22.00     0.07      0.064       (  0.248)       0.058        0.006
265  22.08     0.10      0.096       (  0.247)       0.086        0.010
266  22.17     0.10      0.096       (  0.246)       0.086        0.010
267  22.25     0.10      0.096       (  0.246)       0.086        0.010
268  22.33     0.07      0.064       (  0.245)       0.058        0.006
269  22.42     0.07      0.064       (  0.244)       0.058        0.006
270  22.50     0.07      0.064       (  0.243)       0.058        0.006
271  22.58     0.07      0.064       (  0.243)       0.058        0.006
272  22.67     0.07      0.064       (  0.242)       0.058        0.006
273  22.75     0.07      0.064       (  0.241)       0.058        0.006
274  22.83     0.07      0.064       (  0.241)       0.058        0.006
275  22.92     0.07      0.064       (  0.240)       0.058        0.006
276  23.00     0.07      0.064       (  0.240)       0.058        0.006
277  23.08     0.07      0.064       (  0.239)       0.058        0.006
278  23.17     0.07      0.064       (  0.238)       0.058        0.006
279  23.25     0.07      0.064       (  0.238)       0.058        0.006
280  23.33     0.07      0.064       (  0.237)       0.058        0.006
281  23.42     0.07      0.064       (  0.237)       0.058        0.006
282  23.50     0.07      0.064       (  0.237)       0.058        0.006
283  23.58     0.07      0.064       (  0.236)       0.058        0.006
284  23.67     0.07      0.064       (  0.236)       0.058        0.006
285  23.75     0.07      0.064       (  0.236)       0.058        0.006
286  23.83     0.07      0.064       (  0.235)       0.058        0.006
287  23.92     0.07      0.064       (  0.235)       0.058        0.006
288  24.00     0.07      0.064       (  0.235)       0.058        0.006
            (Loss Rate Not Used)
    Sum =     100.0                                  Sum =    28.8
      Flood volume = Effective rainfall      2.40(In)
       times area     218.6(Ac.)/[(In)/(Ft.)] =      43.7(Ac.Ft)
      Total soil loss =      5.60(In)
      Total soil loss =   101.918(Ac.Ft)
      Total rainfall =      8.00(In)
      Flood volume =     1904724.1 Cubic Feet
      Total soil loss =     4439548.9 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =    134.800(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0       50.0     100.0     150.0     200.0
 ---------------------------------------------------------------------------
   0+ 5       0.0003      0.04  Q         |         |         |         |
   0+10       0.0016      0.19  Q         |         |         |         |
   0+15       0.0047      0.45  Q         |         |         |         |
   0+20       0.0099      0.76  Q         |         |         |         |
```

0+25	0.0169	1.01	Q	|	|	|	|
0+30	0.0255	1.25	Q	|	|	|	|
0+35	0.0355	1.46	Q	|	|	|	|
0+40	0.0465	1.60	Q	|	|	|	|
0+45	0.0582	1.69	Q	|	|	|	|
0+50	0.0704	1.78	Q	|	|	|	|
0+55	0.0836	1.91	Q	|	|	|	|
1+ 0	0.0980	2.09	Q	|	|	|	|
1+ 5	0.1135	2.25	Q	|	|	|	|
1+10	0.1293	2.29	Q	|	|	|	|
1+15	0.1447	2.24	Q	|	|	|	|
1+20	0.1596	2.16	Q	|	|	|	|
1+25	0.1741	2.11	Q	|	|	|	|
1+30	0.1886	2.10	Q	|	|	|	|
1+35	0.2030	2.10	Q	|	|	|	|
1+40	0.2175	2.10	Q	|	|	|	|
1+45	0.2320	2.10	Q	|	|	|	|
1+50	0.2467	2.13	Q	|	|	|	|
1+55	0.2619	2.21	Q	|	|	|	|
2+ 0	0.2780	2.34	Q	|	|	|	|
2+ 5	0.2951	2.48	Q	|	|	|	|
2+10	0.3128	2.58	Q	|	|	|	|
2+15	0.3310	2.64	Q	|	|	|	|
2+20	0.3494	2.67	Q	|	|	|	|
2+25	0.3680	2.70	Q	|	|	|	|
2+30	0.3867	2.72	Q	|	|	|	|
2+35	0.4056	2.75	Q	|	|	|	|
2+40	0.4252	2.84	Q	|	|	|	|
2+45	0.4458	2.98	Q	|	|	|	|
2+50	0.4673	3.13	Q	|	|	|	|
2+55	0.4896	3.23	Q	|	|	|	|
3+ 0	0.5123	3.29	Q	|	|	|	|
3+ 5	0.5352	3.33	Q	|	|	|	|
3+10	0.5584	3.36	Q	|	|	|	|
3+15	0.5817	3.39	Q	|	|	|	|
3+20	0.6052	3.41	Q	|	|	|	|
3+25	0.6288	3.43	Q	|	|	|	|
3+30	0.6525	3.44	Q	|	|	|	|
3+35	0.6762	3.45	Q	|	|	|	|
3+40	0.7001	3.47	Q	|	|	|	|
3+45	0.7240	3.47	Q	|	|	|	|
3+50	0.7482	3.50	Q	|	|	|	|
3+55	0.7729	3.59	Q	|	|	|	|
4+ 0	0.7985	3.72	Q	|	|	|	|
4+ 5	0.8252	3.87	Q	|	|	|	|
4+10	0.8525	3.97	Q	|	|	|	|
4+15	0.8802	4.02	Q	|	|	|	|
4+20	0.9083	4.08	Q	|	|	|	|
4+25	0.9371	4.18	Q	|	|	|	|
4+30	0.9669	4.33	Q	|	|	|	|
4+35	0.9979	4.50	Q	|	|	|	|
4+40	1.0296	4.60	Q	|	|	|	|
4+45	1.0617	4.67	Q	|	|	|	|
4+50	1.0944	4.73	QV	|	|	|	|
4+55	1.1277	4.84	QV	|	|	|	|
5+ 0	1.1622	5.00	|Q	|	|	|	|
5+ 5	1.1975	5.13	|Q	|	|	|	|
5+10	1.2325	5.09	|Q	|	|	|	|
5+15	1.2663	4.90	QV	|	|	|	|
5+20	1.2985	4.68	QV	|	|	|	|
5+25	1.3303	4.61	QV	|	|	|	|
5+30	1.3625	4.67	QV	|	|	|	|
5+35	1.3955	4.80	QV	|	|	|	|

5+40	1.4295	4.93	QV	|	|	|	|
5+45	1.4645	5.09	|Q	|	|	|	|
5+50	1.5007	5.25	|Q	|	|	|	|
5+55	1.5375	5.35	|Q	|	|	|	|
6+ 0	1.5748	5.41	|Q	|	|	|	|
6+ 5	1.6125	5.47	|Q	|	|	|	|
6+10	1.6509	5.58	|Q	|	|	|	|
6+15	1.6904	5.74	|Q	|	|	|	|
6+20	1.7311	5.90	|Q	|	|	|	|
6+25	1.7724	6.01	|Q	|	|	|	|
6+30	1.8143	6.07	|Q	|	|	|	|
6+35	1.8565	6.14	|Q	|	|	|	|
6+40	1.8996	6.25	|Q	|	|	|	|
6+45	1.9437	6.41	|Q	|	|	|	|
6+50	1.9890	6.58	|Q	|	|	|	|
6+55	2.0351	6.69	|Q	|	|	|	|
7+ 0	2.0816	6.76	|Q	|	|	|	|
7+ 5	2.1285	6.81	|Q	|	|	|	|
7+10	2.1756	6.84	|Q	|	|	|	|
7+15	2.2229	6.87	|QV	|	|	|	|
7+20	2.2706	6.92	|QV	|	|	|	|
7+25	2.3189	7.02	|QV	|	|	|	|
7+30	2.3683	7.17	|QV	|	|	|	|
7+35	2.4190	7.35	|QV	|	|	|	|
7+40	2.4708	7.53	|QV	|	|	|	|
7+45	2.5241	7.73	|QV	|	|	|	|
7+50	2.5787	7.93	|QV	|	|	|	|
7+55	2.6347	8.13	|QV	|	|	|	|
8+ 0	2.6922	8.34	|QV	|	|	|	|
8+ 5	2.7513	8.58	|QV	|	|	|	|
8+10	2.8124	8.87	|QV	|	|	|	|
8+15	2.8759	9.22	|QV	|	|	|	|
8+20	2.9418	9.57	|QV	|	|	|	|
8+25	3.0094	9.80	|QV	|	|	|	|
8+30	3.0779	9.95	|QV	|	|	|	|
8+35	3.1473	10.08	| Q	|	|	|	|
8+40	3.2178	10.23	| Q	|	|	|	|
8+45	3.2896	10.43	| QV	|	|	|	|
8+50	3.3630	10.65	| QV	|	|	|	|
8+55	3.4378	10.86	| QV	|	|	|	|
9+ 0	3.5142	11.09	| QV	|	|	|	|
9+ 5	3.5933	11.49	| QV	|	|	|	|
9+10	3.6784	12.36	| QV	|	|	|	|
9+15	3.7733	13.77	| QV	|	|	|	|
9+20	3.8805	15.57	| Q	|	|	|	|
9+25	4.0011	17.52	| Q	|	|	|	|
9+30	4.1370	19.72	| Q	|	|	|	|
9+35	4.2892	22.10	| VQ	|	|	|	|
9+40	4.4576	24.46	| Q	|	|	|	|
9+45	4.6432	26.95	| VQ	|	|	|	|
9+50	4.8468	29.56	| VQ	|	|	|	|
9+55	5.0678	32.09	| V Q	|	|	|	|
10+ 0	5.3070	34.74	| V Q	|	|	|	|
10+ 5	5.5565	36.23	| V Q	|	|	|	|
10+10	5.7929	34.33	| VQ	|	|	|	|
10+15	5.9931	29.07	| Q	|	|	|	|
10+20	6.1508	22.89	| QV	|	|	|	|
10+25	6.2823	19.09	| Q V	|	|	|	|
10+30	6.3998	17.07	| Q V	|	|	|	|
10+35	6.5142	16.61	| Q V	|	|	|	|
10+40	6.6406	18.35	| Q V	|	|	|	|
10+45	6.7943	22.31	| Q V	|	|	|	|
10+50	6.9794	26.88	| QV	|	|	|	|



```
16+10      40.8547     56.19  |          |Q         |          |       V  |
16+15      41.1664     45.25  |          Q|         |          |       V  |
16+20      41.3965     33.41  |       Q   |         |          |       V  |
16+25      41.5735     25.71  |     Q     |         |          |        V |
16+30      41.7186     21.07  |    Q      |         |          |        V |
16+35      41.8423     17.97  |  Q        |         |          |        V |
16+40      41.9488     15.45  |  Q        |         |          |        V |
16+45      42.0407     13.35  | Q         |         |          |        V |
16+50      42.1202     11.53  | Q         |         |          |        V |
16+55      42.1894     10.06  | Q         |         |          |        V |
17+ 0      42.2500      8.79  |Q          |         |          |        V |
17+ 5      42.3038      7.81  |Q          |         |          |        V |
17+10      42.3526      7.08  |Q          |         |          |        V |
17+15      42.3982      6.62  |Q          |         |          |        V |
17+20      42.4413      6.26  |Q          |         |          |        V |
17+25      42.4816      5.84  |Q          |         |          |        V |
17+30      42.5191      5.45  |Q          |         |          |        V |
17+35      42.5541      5.08  |Q          |         |          |        V |
17+40      42.5868      4.75  Q           |         |          |        V |
17+45      42.6173      4.42  Q           |         |          |        V |
17+50      42.6463      4.21  Q           |         |          |         V|
17+55      42.6737      3.98  Q           |         |          |         V|
18+ 0      42.6992      3.71  Q           |         |          |         V|
18+ 5      42.7228      3.42  Q           |         |          |         V|
18+10      42.7447      3.18  Q           |         |          |         V|
18+15      42.7650      2.94  Q           |         |          |         V|
18+20      42.7851      2.92  Q           |         |          |         V|
18+25      42.8051      2.90  Q           |         |          |         V|
18+30      42.8249      2.89  Q           |         |          |         V|
18+35      42.8446      2.86  Q           |         |          |         V|
18+40      42.8637      2.77  Q           |         |          |         V|
18+45      42.8819      2.64  Q           |         |          |         V|
18+50      42.8989      2.47  Q           |         |          |         V|
18+55      42.9147      2.30  Q           |         |          |         V|
19+ 0      42.9293      2.11  Q           |         |          |         V|
19+ 5      42.9427      1.96  Q           |         |          |         V|
19+10      42.9559      1.91  Q           |         |          |         V|
19+15      42.9695      1.97  Q           |         |          |         V|
19+20      42.9838      2.08  Q           |         |          |         V|
19+25      42.9989      2.20  Q           |         |          |         V|
19+30      43.0150      2.34  Q           |         |          |         V|
19+35      43.0320      2.47  Q           |         |          |         V|
19+40      43.0492      2.48  Q           |         |          |         V|
19+45      43.0657      2.41  Q           |         |          |         V|
19+50      43.0814      2.28  Q           |         |          |         V|
19+55      43.0961      2.13  Q           |         |          |         V|
20+ 0      43.1097      1.97  Q           |         |          |         V|
20+ 5      43.1223      1.83  Q           |         |          |         V|
20+10      43.1347      1.80  Q           |         |          |         V|
20+15      43.1476      1.87  Q           |         |          |         V|
20+20      43.1611      1.97  Q           |         |          |         V|
20+25      43.1751      2.03  Q           |         |          |         V|
20+30      43.1893      2.05  Q           |         |          |         V|
20+35      43.2035      2.07  Q           |         |          |         V|
20+40      43.2178      2.08  Q           |         |          |         V|
20+45      43.2321      2.08  Q           |         |          |         V|
20+50      43.2464      2.07  Q           |         |          |         V|
20+55      43.2601      2.00  Q           |         |          |         V|
21+ 0      43.2730      1.87  Q           |         |          |         V|
21+ 5      43.2850      1.75  Q           |         |          |         V|
21+10      43.2970      1.74  Q           |         |          |         V|
21+15      43.3095      1.82  Q           |         |          |         V|
21+20      43.3227      1.91  Q           |         |          |         V|
```

21+25	43.3358	1.90	Q	|	|	|	V|
21+30	43.3482	1.80	Q	|	|	|	V|
21+35	43.3599	1.70	Q	|	|	|	V|
21+40	43.3715	1.69	Q	|	|	|	V|
21+45	43.3838	1.78	Q	|	|	|	V|
21+50	43.3967	1.87	Q	|	|	|	V|
21+55	43.4096	1.87	Q	|	|	|	V|
22+ 0	43.4218	1.78	Q	|	|	|	V|
22+ 5	43.4333	1.68	Q	|	|	|	V|
22+10	43.4449	1.68	Q	|	|	|	V|
22+15	43.4571	1.77	Q	|	|	|	V|
22+20	43.4699	1.87	Q	|	|	|	V|
22+25	43.4827	1.86	Q	|	|	|	V|
22+30	43.4949	1.77	Q	|	|	|	V|
22+35	43.5063	1.65	Q	|	|	|	V|
22+40	43.5171	1.58	Q	|	|	|	V|
22+45	43.5277	1.53	Q	|	|	|	V|
22+50	43.5381	1.51	Q	|	|	|	V|
22+55	43.5484	1.49	Q	|	|	|	V|
23+ 0	43.5586	1.48	Q	|	|	|	V|
23+ 5	43.5687	1.47	Q	|	|	|	V|
23+10	43.5788	1.46	Q	|	|	|	V|
23+15	43.5888	1.45	Q	|	|	|	V|
23+20	43.5988	1.45	Q	|	|	|	V|
23+25	43.6087	1.44	Q	|	|	|	V|
23+30	43.6186	1.44	Q	|	|	|	V|
23+35	43.6284	1.43	Q	|	|	|	V|
23+40	43.6383	1.43	Q	|	|	|	V|
23+45	43.6481	1.43	Q	|	|	|	V|
23+50	43.6579	1.42	Q	|	|	|	V|
23+55	43.6677	1.42	Q	|	|	|	V|
24+ 0	43.6775	1.42	Q	|	|	|	V|
24+ 5	43.6869	1.38	Q	|	|	|	V|
24+10	43.6954	1.23	Q	|	|	|	V|
24+15	43.7020	0.97	Q	|	|	|	V|
24+20	43.7067	0.68	Q	|	|	|	V|
24+25	43.7101	0.50	Q	|	|	|	V|
24+30	43.7128	0.39	Q	|	|	|	V|
24+35	43.7150	0.32	Q	|	|	|	V|
24+40	43.7169	0.27	Q	|	|	|	V|
24+45	43.7184	0.23	Q	|	|	|	V|
24+50	43.7198	0.19	Q	|	|	|	V|
24+55	43.7209	0.16	Q	|	|	|	V|
25+ 0	43.7218	0.14	Q	|	|	|	V|
25+ 5	43.7227	0.12	Q	|	|	|	V|
25+10	43.7234	0.10	Q	|	|	|	V|
25+15	43.7240	0.09	Q	|	|	|	V|
25+20	43.7245	0.07	Q	|	|	|	V|
25+25	43.7249	0.06	Q	|	|	|	V|
25+30	43.7252	0.05	Q	|	|	|	V|
25+35	43.7255	0.04	Q	|	|	|	V|
25+40	43.7258	0.04	Q	|	|	|	V|
25+45	43.7260	0.03	Q	|	|	|	V|
25+50	43.7261	0.02	Q	|	|	|	V|
25+55	43.7263	0.02	Q	|	|	|	V|
26+ 0	43.7263	0.01	Q	|	|	|	V|
26+ 5	43.7264	0.01	Q	|	|	|	V|
26+10	43.7264	0.01	Q	|	|	|	V

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: AUH1006EXIST6100.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "A"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
100 YEAR - 6 HOUR
FN: AUH1006EXIST

Drainage Area = 218.56(Ac.) = 0.342 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 218.56(Ac.) = 0.342 Sq. Mi.
Length along longest watercourse = 7012.00(Ft.)
Length along longest watercourse measured to centroid = 3373.00(Ft.)
Length along longest watercourse = 1.328 Mi.
Length along longest watercourse measured to centroid = 0.639 Mi.
Difference in elevation = 321.00(Ft.)
Slope along watercourse = 241.7114 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.278 Hr.
Lag time = 16.69 Min.
25% of lag time = 4.17 Min.
40% of lag time = 6.68 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	1.40	305.98

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	3.00	655.68

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.400(In)
Area Averaged 100-Year Rainfall = 3.000(In)

Point rain (area averaged) = 3.000(In)
Areal adjustment factor = 99.92 %
Adjusted average point rain = 2.998(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
218.560	60.00	0.000

Total Area Entered = 218.56(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
60.0	60.0	0.470	0.000	0.470	1.000	0.470
					Sum (F) =	0.470

Area averaged mean soil loss (F) (In/Hr) = 0.470
Minimum soil loss rate ((In/Hr)) = 0.235
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

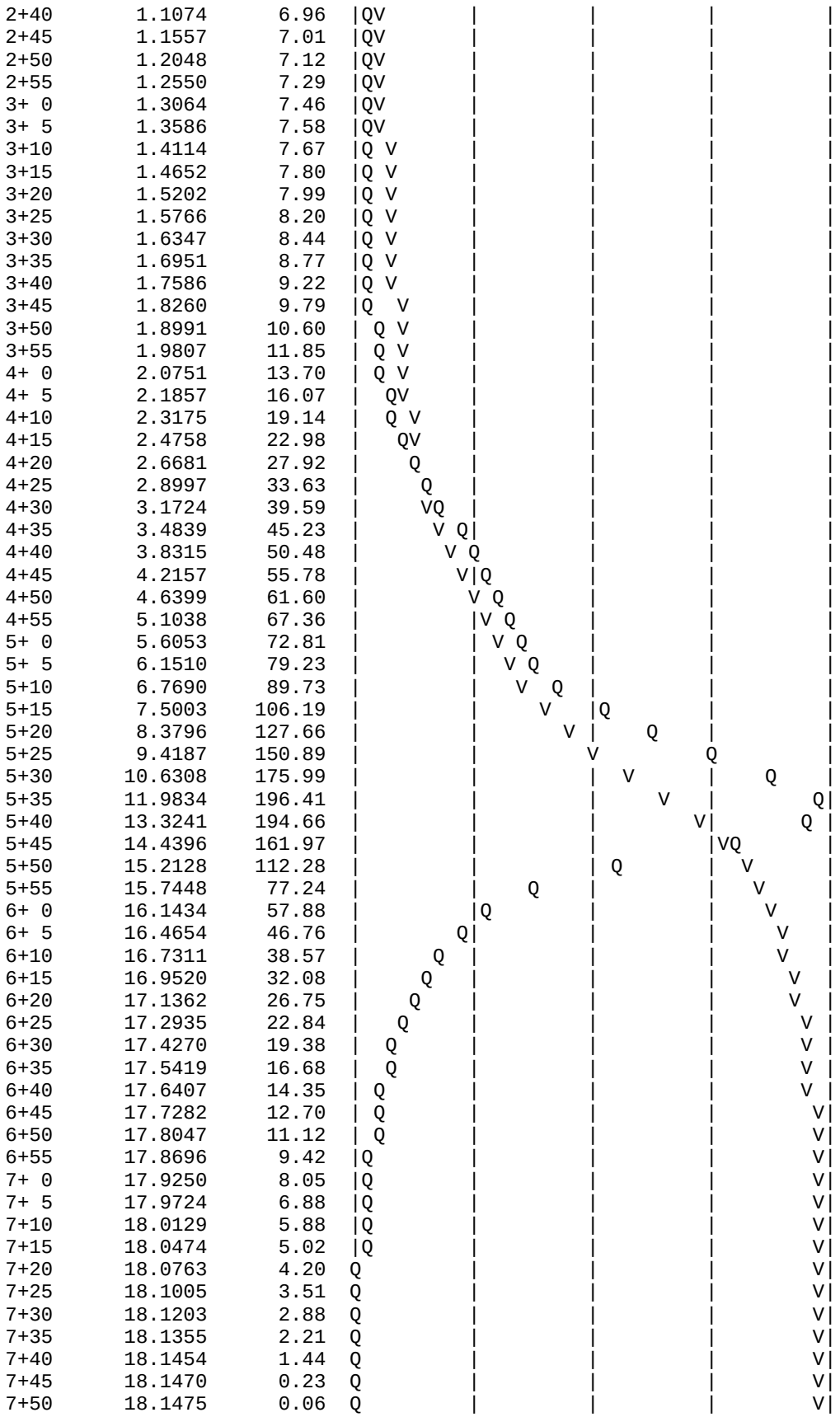
Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	29.957	2.894	6.376
2	0.167	59.914	10.603	23.355
3	0.250	89.872	18.530	40.817
4	0.333	119.829	20.150	44.385
5	0.417	149.786	12.840	28.283
6	0.500	179.743	7.392	16.282
7	0.583	209.701	4.765	10.495
8	0.667	239.658	3.715	8.183
9	0.750	269.615	2.997	6.601
10	0.833	299.572	2.496	5.499
11	0.917	329.529	1.990	4.383
12	1.000	359.487	1.773	3.906
13	1.083	389.444	1.430	3.150
14	1.167	419.401	1.243	2.737
15	1.250	449.358	0.981	2.161
16	1.333	479.316	0.930	2.048
17	1.417	509.273	0.887	1.954
18	1.500	539.230	0.716	1.578
19	1.583	569.187	0.634	1.398
20	1.667	599.144	0.547	1.205
21	1.750	629.102	0.483	1.063
22	1.833	659.059	0.414	0.912
23	1.917	689.016	0.329	0.724
24	2.000	718.973	0.300	0.660
25	2.083	748.931	0.300	0.660
26	2.167	778.888	0.300	0.660
27	2.250	808.845	0.361	0.795
			Sum = 100.000	Sum= 220.268

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.180	(0.470)	0.162	0.018
2	0.17	0.60	0.216	(0.470)	0.194	0.022
3	0.25	0.60	0.216	(0.470)	0.194	0.022
4	0.33	0.60	0.216	(0.470)	0.194	0.022
5	0.42	0.60	0.216	(0.470)	0.194	0.022
6	0.50	0.70	0.252	(0.470)	0.227	0.025
7	0.58	0.70	0.252	(0.470)	0.227	0.025
8	0.67	0.70	0.252	(0.470)	0.227	0.025
9	0.75	0.70	0.252	(0.470)	0.227	0.025
10	0.83	0.70	0.252	(0.470)	0.227	0.025
11	0.92	0.70	0.252	(0.470)	0.227	0.025
12	1.00	0.80	0.288	(0.470)	0.259	0.029
13	1.08	0.80	0.288	(0.470)	0.259	0.029
14	1.17	0.80	0.288	(0.470)	0.259	0.029
15	1.25	0.80	0.288	(0.470)	0.259	0.029
16	1.33	0.80	0.288	(0.470)	0.259	0.029
17	1.42	0.80	0.288	(0.470)	0.259	0.029
18	1.50	0.80	0.288	(0.470)	0.259	0.029
19	1.58	0.80	0.288	(0.470)	0.259	0.029
20	1.67	0.80	0.288	(0.470)	0.259	0.029
21	1.75	0.80	0.288	(0.470)	0.259	0.029
22	1.83	0.80	0.288	(0.470)	0.259	0.029
23	1.92	0.80	0.288	(0.470)	0.259	0.029
24	2.00	0.90	0.324	(0.470)	0.291	0.032
25	2.08	0.80	0.288	(0.470)	0.259	0.029
26	2.17	0.90	0.324	(0.470)	0.291	0.032
27	2.25	0.90	0.324	(0.470)	0.291	0.032
28	2.33	0.90	0.324	(0.470)	0.291	0.032
29	2.42	0.90	0.324	(0.470)	0.291	0.032
30	2.50	0.90	0.324	(0.470)	0.291	0.032
31	2.58	0.90	0.324	(0.470)	0.291	0.032
32	2.67	0.90	0.324	(0.470)	0.291	0.032
33	2.75	1.00	0.360	(0.470)	0.324	0.036
34	2.83	1.00	0.360	(0.470)	0.324	0.036
35	2.92	1.00	0.360	(0.470)	0.324	0.036
36	3.00	1.00	0.360	(0.470)	0.324	0.036
37	3.08	1.00	0.360	(0.470)	0.324	0.036
38	3.17	1.10	0.396	(0.470)	0.356	0.040
39	3.25	1.10	0.396	(0.470)	0.356	0.040
40	3.33	1.10	0.396	(0.470)	0.356	0.040
41	3.42	1.20	0.432	(0.470)	0.389	0.043
42	3.50	1.30	0.468	(0.470)	0.421	0.047
43	3.58	1.40	0.504	(0.470)	0.453	0.050
44	3.67	1.40	0.504	(0.470)	0.453	0.050
45	3.75	1.50	0.540	0.470	(0.486)	0.070
46	3.83	1.50	0.540	0.470	(0.486)	0.070
47	3.92	1.60	0.576	0.470	(0.518)	0.106
48	4.00	1.60	0.576	0.470	(0.518)	0.106
49	4.08	1.70	0.612	0.470	(0.550)	0.142
50	4.17	1.80	0.648	0.470	(0.583)	0.178
51	4.25	1.90	0.683	0.470	(0.615)	0.214
52	4.33	2.00	0.719	0.470	(0.648)	0.250
53	4.42	2.10	0.755	0.470	(0.680)	0.286
54	4.50	2.10	0.755	0.470	(0.680)	0.286
55	4.58	2.20	0.791	0.470	(0.712)	0.322
56	4.67	2.30	0.827	0.470	(0.745)	0.358
57	4.75	2.40	0.863	0.470	(0.777)	0.393
58	4.83	2.40	0.863	0.470	(0.777)	0.393
59	4.92	2.50	0.899	0.470	(0.809)	0.429
60	5.00	2.60	0.935	0.470	(0.842)	0.465
61	5.08	3.10	1.115	0.470	(1.004)	0.645

```
62   5.17     3.60      1.295          0.470    (  1.166)        0.825
63   5.25     3.90      1.403          0.470    (  1.263)        0.933
64   5.33     4.20      1.511          0.470    (  1.360)        1.041
65   5.42     4.70      1.691          0.470    (  1.522)        1.221
66   5.50     5.60      2.014          0.470    (  1.813)        1.545
67   5.58     1.90      0.683          0.470    (  0.615)        0.214
68   5.67     0.90      0.324       (  0.470)       0.291        0.032
69   5.75     0.60      0.216       (  0.470)       0.194        0.022
70   5.83     0.50      0.180       (  0.470)       0.162        0.018
71   5.92     0.30      0.108       (  0.470)       0.097        0.011
72   6.00     0.20      0.072       (  0.470)       0.065        0.007
            (Loss Rate Not Used)
   Sum =     100.0                                    Sum =    12.0
    Flood volume = Effective rainfall      1.00(In)
     times area     218.6(Ac.)/[(In)/(Ft.)] =      18.1(Ac.Ft)
    Total soil loss =      2.00(In)
    Total soil loss =    36.451(Ac.Ft)
    Total rainfall =      3.00(In)
    Flood volume =      790529.4 Cubic Feet
    Total soil loss =     1587800.8 Cubic Feet
    ---------------------------------------------------------------------
     Peak flow rate of this hydrograph =    196.405(CFS)
    ---------------------------------------------------------------------
    +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        6 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
    ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

    ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       50.0     100.0     150.0     200.0
-------------------------------------------------------------------------
  0+ 5       0.0008      0.11  Q         |         |         |         |
  0+10       0.0046      0.56  Q         |         |         |         |
  0+15       0.0141      1.38  Q         |         |         |         |
  0+20       0.0301      2.32  Q         |         |         |         |
  0+25       0.0507      2.99  Q         |         |         |         |
  0+30       0.0742      3.41  Q         |         |         |         |
  0+35       0.0999      3.74  Q         |         |         |         |
  0+40       0.1280      4.07  Q         |         |         |         |
  0+45       0.1581      4.38  Q         |         |         |         |
  0+50       0.1899      4.60  Q         |         |         |         |
  0+55       0.2227      4.76  Q         |         |         |         |
  1+ 0       0.2565      4.91  Q         |         |         |         |
  1+ 5       0.2915      5.09  VQ        |         |         |         |
  1+10       0.3282      5.32  VQ        |         |         |         |
  1+15       0.3664      5.55  VQ        |         |         |         |
  1+20       0.4058      5.71  VQ        |         |         |         |
  1+25       0.4460      5.83  VQ        |         |         |         |
  1+30       0.4867      5.91  |Q        |         |         |         |
  1+35       0.5279      5.98  |Q        |         |         |         |
  1+40       0.5695      6.04  |Q        |         |         |         |
  1+45       0.6115      6.09  |Q        |         |         |         |
  1+50       0.6537      6.14  |Q        |         |         |         |
  1+55       0.6963      6.17  |Q        |         |         |         |
  2+ 0       0.7391      6.23  |Q        |         |         |         |
  2+ 5       0.7826      6.32  |Q        |         |         |         |
  2+10       0.8269      6.43  |Q        |         |         |         |
  2+15       0.8720      6.55  |Q        |         |         |         |
  2+20       0.9178      6.65  |QV       |         |         |         |
  2+25       0.9645      6.78  |QV       |         |         |         |
  2+30       1.0118      6.87  |QV       |         |         |         |
  2+35       1.0595      6.92  |QV       |         |         |         |
```



```
    7+55      18.1477      0.04  Q         |         |         |        V|
    8+ 0      18.1479      0.03  Q         |         |         |        V|
    8+ 5      18.1480      0.01  Q         |         |         |        V|
    8+10      18.1481      0.01  Q         |         |         |         V
---------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: AUH1003EXIST3100.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "A"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
100 YEAR - 3 HOUR
FN: AUH1003EXIST

Drainage Area = 218.56(Ac.) = 0.342 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 218.56(Ac.) = 0.342 Sq. Mi.
Length along longest watercourse = 7012.00(Ft.)
Length along longest watercourse measured to centroid = 3373.00(Ft.)
Length along longest watercourse = 1.328 Mi.
Length along longest watercourse measured to centroid = 0.639 Mi.
Difference in elevation = 321.00(Ft.)
Slope along watercourse = 241.7114 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.278 Hr.
Lag time = 16.69 Min.
25% of lag time = 4.17 Min.
40% of lag time = 6.68 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	1.00	218.56

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	2.40	524.54

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.000(In)
Area Averaged 100-Year Rainfall = 2.400(In)

Point rain (area averaged) = 2.400(In)
Areal adjustment factor = 99.90 %
Adjusted average point rain = 2.398(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
218.560	60.00	0.000

Total Area Entered = 218.56(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
60.0	60.0	0.470	0.000	0.470	1.000	0.470
					Sum (F) =	0.470

Area averaged mean soil loss (F) (In/Hr) = 0.470
Minimum soil loss rate ((In/Hr)) = 0.235
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	29.957	2.894	6.376
2	0.167	59.914	10.603	23.355
3	0.250	89.872	18.530	40.817
4	0.333	119.829	20.150	44.385
5	0.417	149.786	12.840	28.283
6	0.500	179.743	7.392	16.282
7	0.583	209.701	4.765	10.495
8	0.667	239.658	3.715	8.183
9	0.750	269.615	2.997	6.601
10	0.833	299.572	2.496	5.499
11	0.917	329.529	1.990	4.383
12	1.000	359.487	1.773	3.906
13	1.083	389.444	1.430	3.150
14	1.167	419.401	1.243	2.737
15	1.250	449.358	0.981	2.161
16	1.333	479.316	0.930	2.048
17	1.417	509.273	0.887	1.954
18	1.500	539.230	0.716	1.578
19	1.583	569.187	0.634	1.398
20	1.667	599.144	0.547	1.205
21	1.750	629.102	0.483	1.063
22	1.833	659.059	0.414	0.912
23	1.917	689.016	0.329	0.724
24	2.000	718.973	0.300	0.660
25	2.083	748.931	0.300	0.660
26	2.167	778.888	0.300	0.660
27	2.250	808.845	0.361	0.795
			Sum = 100.000	Sum= 220.268

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.374	(0.470)	0.337	0.037
2	0.17	1.30	0.374	(0.470)	0.337	0.037
3	0.25	1.10	0.316	(0.470)	0.285	0.032
4	0.33	1.50	0.432	(0.470)	0.388	0.043
5	0.42	1.50	0.432	(0.470)	0.388	0.043
6	0.50	1.80	0.518	(0.470)	0.466	0.052
7	0.58	1.50	0.432	(0.470)	0.388	0.043
8	0.67	1.80	0.518	(0.470)	0.466	0.052
9	0.75	1.80	0.518	(0.470)	0.466	0.052
10	0.83	1.50	0.432	(0.470)	0.388	0.043
11	0.92	1.60	0.460	(0.470)	0.414	0.046
12	1.00	1.80	0.518	(0.470)	0.466	0.052
13	1.08	2.20	0.633	0.470	(0.570)	0.163
14	1.17	2.20	0.633	0.470	(0.570)	0.163
15	1.25	2.20	0.633	0.470	(0.570)	0.163
16	1.33	2.00	0.575	0.470	(0.518)	0.106
17	1.42	2.60	0.748	0.470	(0.673)	0.278
18	1.50	2.70	0.777	0.470	(0.699)	0.307
19	1.58	2.40	0.691	0.470	(0.621)	0.221
20	1.67	2.70	0.777	0.470	(0.699)	0.307
21	1.75	3.30	0.949	0.470	(0.855)	0.480
22	1.83	3.10	0.892	0.470	(0.803)	0.422
23	1.92	2.90	0.834	0.470	(0.751)	0.365
24	2.00	3.00	0.863	0.470	(0.777)	0.393
25	2.08	3.10	0.892	0.470	(0.803)	0.422
26	2.17	4.20	1.208	0.470	(1.088)	0.739
27	2.25	5.00	1.439	0.470	(1.295)	0.969
28	2.33	3.50	1.007	0.470	(0.906)	0.537
29	2.42	6.80	1.957	0.470	(1.761)	1.487
30	2.50	7.30	2.100	0.470	(1.890)	1.631
31	2.58	8.20	2.359	0.470	(2.123)	1.889
32	2.67	5.90	1.698	0.470	(1.528)	1.228
33	2.75	2.00	0.575	0.470	(0.518)	0.106
34	2.83	1.80	0.518	(0.470)	0.466	0.052
35	2.92	1.80	0.518	(0.470)	0.466	0.052
36	3.00	0.60	0.173	(0.470)	0.155	0.017

(Loss Rate Not Used)

Sum = 100.0 Sum = 13.0

Flood volume = Effective rainfall 1.09(In)
times area 218.6(Ac.)/[(In)/(Ft.)] = 19.8(Ac.Ft)
Total soil loss = 1.31(In)
Total soil loss = 23.898(Ac.Ft)
Total rainfall = 2.40(In)
Flood volume = 861290.0 Cubic Feet
Total soil loss = 1040984.0 Cubic Feet

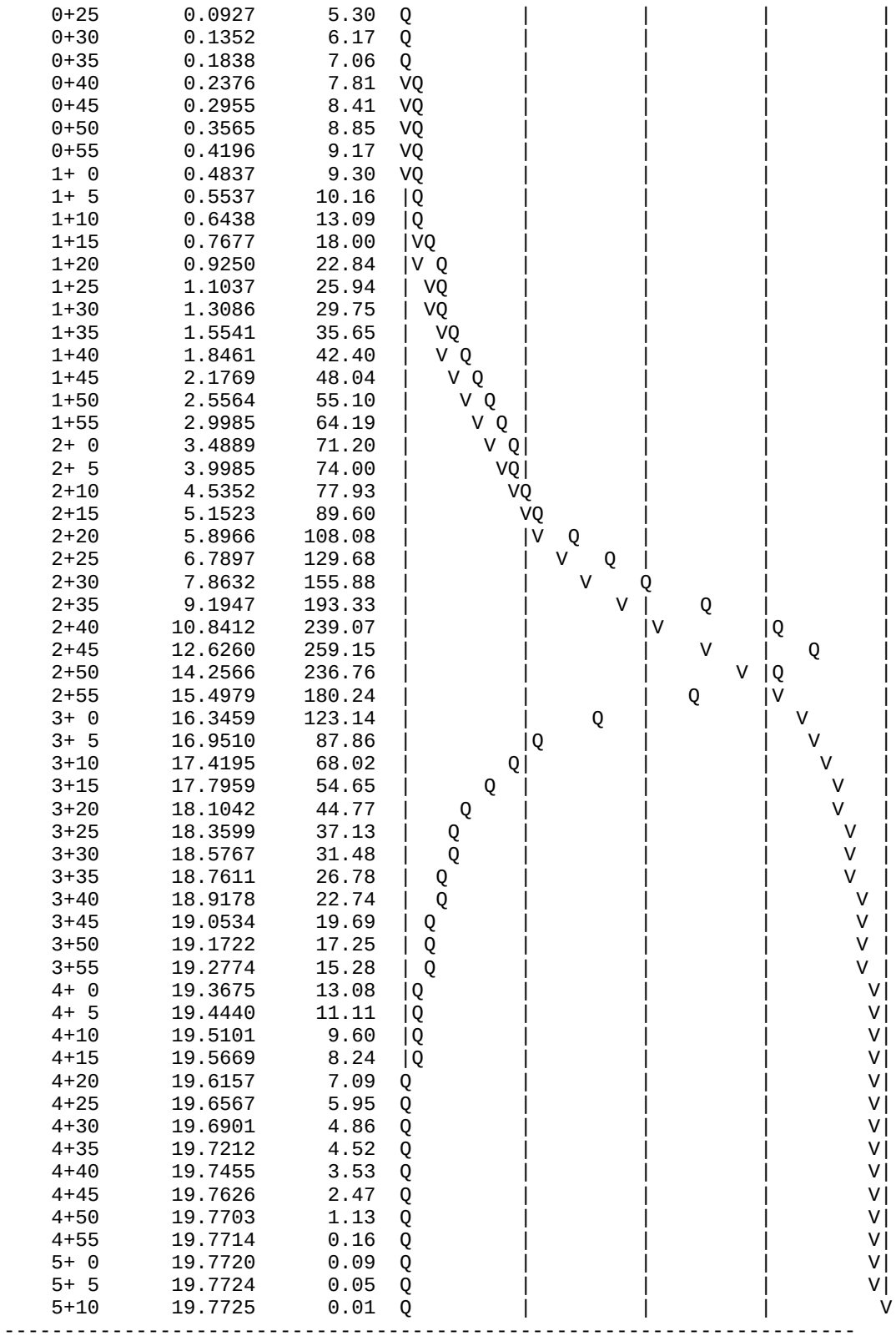
Peak flow rate of this hydrograph = 259.150(CFS)

++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	75.0	150.0	225.0	300.0
0+ 5	0.0016	0.24	Q	|	|	|	|
0+10	0.0093	1.11	Q	|	|	|	|
0+15	0.0272	2.60	Q	|	|	|	|
0+20	0.0562	4.20	Q	|	|	|	|



U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: AUH1001EXIST1100.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "A"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
100 YEAR - 1 HOUR
FN: AUH1001EXIST

Drainage Area = 218.56(Ac.) = 0.342 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 218.56(Ac.) = 0.342 Sq. Mi.
Length along longest watercourse = 7012.00(Ft.)
Length along longest watercourse measured to centroid = 3373.00(Ft.)
Length along longest watercourse = 1.328 Mi.
Length along longest watercourse measured to centroid = 0.639 Mi.
Difference in elevation = 321.00(Ft.)
Slope along watercourse = 241.7114 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.278 Hr.
Lag time = 16.69 Min.
25% of lag time = 4.17 Min.
40% of lag time = 6.68 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	0.55	120.21

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	1.36	297.24

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.550(In)
Area Averaged 100-Year Rainfall = 1.360(In)

Point rain (area averaged) = 1.360(In)
Areal adjustment factor = 99.80 %
Adjusted average point rain = 1.357(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
218.560	60.00	0.000

Total Area Entered = 218.56(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
60.0	60.0	0.470	0.000	0.470	1.000	0.470
					Sum (F) =	0.470

Area averaged mean soil loss (F) (In/Hr) = 0.470
Minimum soil loss rate ((In/Hr)) = 0.235
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.4800

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	29.957	2.894	6.376
2	0.167	59.914	10.603	23.355
3	0.250	89.872	18.530	40.817
4	0.333	119.829	20.150	44.385
5	0.417	149.786	12.840	28.283
6	0.500	179.743	7.392	16.282
7	0.583	209.701	4.765	10.495
8	0.667	239.658	3.715	8.183
9	0.750	269.615	2.997	6.601
10	0.833	299.572	2.496	5.499
11	0.917	329.529	1.990	4.383
12	1.000	359.487	1.773	3.906
13	1.083	389.444	1.430	3.150
14	1.167	419.401	1.243	2.737
15	1.250	449.358	0.981	2.161
16	1.333	479.316	0.930	2.048
17	1.417	509.273	0.887	1.954
18	1.500	539.230	0.716	1.578
19	1.583	569.187	0.634	1.398
20	1.667	599.144	0.547	1.205
21	1.750	629.102	0.483	1.063
22	1.833	659.059	0.414	0.912
23	1.917	689.016	0.329	0.724
24	2.000	718.973	0.300	0.660
25	2.083	748.931	0.300	0.660
26	2.167	778.888	0.300	0.660
27	2.250	808.845	0.361	0.795
			Sum = 100.000	Sum= 220.268

The following loss rate calculations reflect use of the minimum calculated loss

rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	4.40	0.717	0.470	(0.645)	0.247
2	0.17	4.50	0.733	0.470	(0.660)	0.263
3	0.25	5.40	0.880	0.470	(0.792)	0.410
4	0.33	5.40	0.880	0.470	(0.792)	0.410
5	0.42	5.70	0.928	0.470	(0.836)	0.459
6	0.50	6.40	1.042	0.470	(0.938)	0.573
7	0.58	7.90	1.287	0.470	(1.158)	0.817
8	0.67	9.10	1.482	0.470	(1.334)	1.012
9	0.75	12.80	2.085	0.470	(1.876)	1.615
10	0.83	25.60	4.170	0.470	(3.753)	3.700
11	0.92	7.90	1.287	0.470	(1.158)	0.817
12	1.00	4.90	0.798	0.470	(0.718)	0.328
	(Loss Rate Not Used)					
Sum =		100.0			Sum =	10.6

Flood volume = Effective rainfall 0.89(In)
times area 218.6(Ac.)/[(In)/(Ft.)] = 16.2(Ac.Ft)
Total soil loss = 0.47(In)
Total soil loss = 8.558(Ac.Ft)
Total rainfall = 1.36(In)
Flood volume = 704078.7 Cubic Feet
Total soil loss = 372771.1 Cubic Feet

Peak flow rate of this hydrograph = 302.786(CFS)

++

1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	100.0	200.0	300.0	400.0
0+ 5	0.0108	1.57	Q	|	|	|	|
0+10	0.0621	7.45	Q	|	|	|	|
0+15	0.1919	18.84	VQ	|	|	|	|
0+20	0.4253	33.89	|V Q	|	|	|	|
0+25	0.7551	47.90	|V Q	|	|	|	|
0+30	1.1735	60.76	| V Q	|	|	|	|
0+35	1.6830	73.98	| V Q	|	|	|	|
0+40	2.3190	92.34	| V Q|	|	|	|	|
0+45	3.1487	120.48	| V | Q	|	|	|	|
0+50	4.3428	173.38	| V Q	|	|	|	|
0+55	6.0536	248.42	| | V | Q	|	|	|	|
1+ 0	8.1389	302.79	| | V Q	|	|	|	|
1+ 5	10.1339	289.67	| | | V Q |	|	|	|	|
1+10	11.5747	209.21	| | Q V |	|	|	|	|
1+15	12.5245	137.91	| | Q |	|	|	| V	|
1+20	13.1694	93.64	| Q|	|	|	| V	|
1+25	13.6566	70.74	| Q |	|	|	| V	|
1+30	14.0476	56.78	| Q |	|	|	| V	|
1+35	14.3714	47.01	| Q |	|	|	| V	|
1+40	14.6394	38.92	| Q |	|	|	| V	|
1+45	14.8691	33.35	| Q |	|	|	| V	|
1+50	15.0618	27.99	| Q |	|	|	| V	|
1+55	15.2275	24.05	| Q |	|	|	| V	|
2+ 0	15.3677	20.36	| Q |	|	|	| V	|
2+ 5	15.4940	18.33	|Q |	|	|	| V	|
2+10	15.6076	16.50	|Q |	|	|	| V	|

```
    2+15      15.7055     14.22  |Q        |         |         |       V |
    2+20      15.7905     12.34  |Q        |         |         |        V|
    2+25      15.8637     10.63  |Q        |         |         |        V|
    2+30      15.9266      9.13  Q         |         |         |        V|
    2+35      15.9801      7.76  Q         |         |         |        V|
    2+40      16.0249      6.50  Q         |         |         |        V|
    2+45      16.0642      5.72  Q         |         |         |        V|
    2+50      16.0993      5.09  Q         |         |         |        V|
    2+55      16.1302      4.48  Q         |         |         |        V|
    3+ 0      16.1557      3.70  Q         |         |         |        V|
    3+ 5      16.1616      0.87  Q         |         |         |        V|
    3+10      16.1634      0.26  Q         |         |         |        V|
-------------------------------------------------------------------------
```

APPENDIX E.2: AREA “A” – EXISTING CONDITION HYDROGRAPH CALCULATIONS 10–YEAR

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: AUH1024EXIST2410.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "A"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
10 YEAR - 24 HOUR
FN: AUH1024EXIST

Drainage Area = 218.56(Ac.) = 0.342 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 218.56(Ac.) = 0.342 Sq. Mi.
Length along longest watercourse = 7012.00(Ft.)
Length along longest watercourse measured to centroid = 3373.00(Ft.)
Length along longest watercourse = 1.328 Mi.
Length along longest watercourse measured to centroid = 0.639 Mi.
Difference in elevation = 321.00(Ft.)
Slope along watercourse = 241.7114 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.278 Hr.
Lag time = 16.69 Min.
25% of lag time = 4.17 Min.
40% of lag time = 6.68 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	2.50	546.40

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	8.00	1748.48

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 2.500(In)
Area Averaged 100-Year Rainfall = 8.000(In)

Point rain (area averaged) = 4.763(In)
Areal adjustment factor = 99.96 %
Adjusted average point rain = 4.761(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
218.560	60.00	0.000

Total Area Entered = 218.56(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
60.0	60.0	0.470	0.000	0.470	1.000	0.470
					Sum (F) =	0.470

Area averaged mean soil loss (F) (In/Hr) = 0.470
Minimum soil loss rate ((In/Hr)) = 0.235
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	29.957	2.894	6.376
2	0.167	59.914	10.603	23.355
3	0.250	89.872	18.530	40.817
4	0.333	119.829	20.150	44.385
5	0.417	149.786	12.840	28.283
6	0.500	179.743	7.392	16.282
7	0.583	209.701	4.765	10.495
8	0.667	239.658	3.715	8.183
9	0.750	269.615	2.997	6.601
10	0.833	299.572	2.496	5.499
11	0.917	329.529	1.990	4.383
12	1.000	359.487	1.773	3.906
13	1.083	389.444	1.430	3.150
14	1.167	419.401	1.243	2.737
15	1.250	449.358	0.981	2.161
16	1.333	479.316	0.930	2.048
17	1.417	509.273	0.887	1.954
18	1.500	539.230	0.716	1.578
19	1.583	569.187	0.634	1.398
20	1.667	599.144	0.547	1.205
21	1.750	629.102	0.483	1.063
22	1.833	659.059	0.414	0.912
23	1.917	689.016	0.329	0.724
24	2.000	718.973	0.300	0.660
25	2.083	748.931	0.300	0.660
26	2.167	778.888	0.300	0.660
27	2.250	808.845	0.361	0.795
			Sum = 100.000	Sum= 220.268

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1	0.08	0.07	0.038	(0.833)		0.034	0.004
2	0.17	0.07	0.038	(0.830)		0.034	0.004
3	0.25	0.07	0.038	(0.826)		0.034	0.004
4	0.33	0.10	0.057	(0.823)		0.051	0.006
5	0.42	0.10	0.057	(0.820)		0.051	0.006
6	0.50	0.10	0.057	(0.817)		0.051	0.006
7	0.58	0.10	0.057	(0.814)		0.051	0.006
8	0.67	0.10	0.057	(0.811)		0.051	0.006
9	0.75	0.10	0.057	(0.807)		0.051	0.006
10	0.83	0.13	0.076	(0.804)		0.069	0.008
11	0.92	0.13	0.076	(0.801)		0.069	0.008
12	1.00	0.13	0.076	(0.798)		0.069	0.008
13	1.08	0.10	0.057	(0.795)		0.051	0.006
14	1.17	0.10	0.057	(0.792)		0.051	0.006
15	1.25	0.10	0.057	(0.788)		0.051	0.006
16	1.33	0.10	0.057	(0.785)		0.051	0.006
17	1.42	0.10	0.057	(0.782)		0.051	0.006
18	1.50	0.10	0.057	(0.779)		0.051	0.006
19	1.58	0.10	0.057	(0.776)		0.051	0.006
20	1.67	0.10	0.057	(0.773)		0.051	0.006
21	1.75	0.10	0.057	(0.770)		0.051	0.006
22	1.83	0.13	0.076	(0.767)		0.069	0.008
23	1.92	0.13	0.076	(0.764)		0.069	0.008
24	2.00	0.13	0.076	(0.760)		0.069	0.008
25	2.08	0.13	0.076	(0.757)		0.069	0.008
26	2.17	0.13	0.076	(0.754)		0.069	0.008
27	2.25	0.13	0.076	(0.751)		0.069	0.008
28	2.33	0.13	0.076	(0.748)		0.069	0.008
29	2.42	0.13	0.076	(0.745)		0.069	0.008
30	2.50	0.13	0.076	(0.742)		0.069	0.008
31	2.58	0.17	0.095	(0.739)		0.086	0.010
32	2.67	0.17	0.095	(0.736)		0.086	0.010
33	2.75	0.17	0.095	(0.733)		0.086	0.010
34	2.83	0.17	0.095	(0.730)		0.086	0.010
35	2.92	0.17	0.095	(0.727)		0.086	0.010
36	3.00	0.17	0.095	(0.724)		0.086	0.010
37	3.08	0.17	0.095	(0.721)		0.086	0.010
38	3.17	0.17	0.095	(0.718)		0.086	0.010
39	3.25	0.17	0.095	(0.715)		0.086	0.010
40	3.33	0.17	0.095	(0.712)		0.086	0.010
41	3.42	0.17	0.095	(0.709)		0.086	0.010
42	3.50	0.17	0.095	(0.706)		0.086	0.010
43	3.58	0.17	0.095	(0.703)		0.086	0.010
44	3.67	0.17	0.095	(0.700)		0.086	0.010
45	3.75	0.17	0.095	(0.697)		0.086	0.010
46	3.83	0.20	0.114	(0.694)		0.103	0.011
47	3.92	0.20	0.114	(0.691)		0.103	0.011
48	4.00	0.20	0.114	(0.688)		0.103	0.011
49	4.08	0.20	0.114	(0.685)		0.103	0.011
50	4.17	0.20	0.114	(0.683)		0.103	0.011
51	4.25	0.20	0.114	(0.680)		0.103	0.011
52	4.33	0.23	0.133	(0.677)		0.120	0.013
53	4.42	0.23	0.133	(0.674)		0.120	0.013
54	4.50	0.23	0.133	(0.671)		0.120	0.013
55	4.58	0.23	0.133	(0.668)		0.120	0.013
56	4.67	0.23	0.133	(0.665)		0.120	0.013
57	4.75	0.23	0.133	(0.662)		0.120	0.013
58	4.83	0.27	0.152	(0.659)		0.137	0.015
59	4.92	0.27	0.152	(0.657)		0.137	0.015
60	5.00	0.27	0.152	(0.654)		0.137	0.015
61	5.08	0.20	0.114	(0.651)		0.103	0.011

62	5.17	0.20	0.114	(0.648)	0.103	0.011
63	5.25	0.20	0.114	(0.645)	0.103	0.011
64	5.33	0.23	0.133	(0.642)	0.120	0.013
65	5.42	0.23	0.133	(0.640)	0.120	0.013
66	5.50	0.23	0.133	(0.637)	0.120	0.013
67	5.58	0.27	0.152	(0.634)	0.137	0.015
68	5.67	0.27	0.152	(0.631)	0.137	0.015
69	5.75	0.27	0.152	(0.629)	0.137	0.015
70	5.83	0.27	0.152	(0.626)	0.137	0.015
71	5.92	0.27	0.152	(0.623)	0.137	0.015
72	6.00	0.27	0.152	(0.620)	0.137	0.015
73	6.08	0.30	0.171	(0.617)	0.154	0.017
74	6.17	0.30	0.171	(0.615)	0.154	0.017
75	6.25	0.30	0.171	(0.612)	0.154	0.017
76	6.33	0.30	0.171	(0.609)	0.154	0.017
77	6.42	0.30	0.171	(0.606)	0.154	0.017
78	6.50	0.30	0.171	(0.604)	0.154	0.017
79	6.58	0.33	0.190	(0.601)	0.171	0.019
80	6.67	0.33	0.190	(0.598)	0.171	0.019
81	6.75	0.33	0.190	(0.596)	0.171	0.019
82	6.83	0.33	0.190	(0.593)	0.171	0.019
83	6.92	0.33	0.190	(0.590)	0.171	0.019
84	7.00	0.33	0.190	(0.588)	0.171	0.019
85	7.08	0.33	0.190	(0.585)	0.171	0.019
86	7.17	0.33	0.190	(0.582)	0.171	0.019
87	7.25	0.33	0.190	(0.580)	0.171	0.019
88	7.33	0.37	0.209	(0.577)	0.189	0.021
89	7.42	0.37	0.209	(0.574)	0.189	0.021
90	7.50	0.37	0.209	(0.572)	0.189	0.021
91	7.58	0.40	0.229	(0.569)	0.206	0.023
92	7.67	0.40	0.229	(0.566)	0.206	0.023
93	7.75	0.40	0.229	(0.564)	0.206	0.023
94	7.83	0.43	0.248	(0.561)	0.223	0.025
95	7.92	0.43	0.248	(0.559)	0.223	0.025
96	8.00	0.43	0.248	(0.556)	0.223	0.025
97	8.08	0.50	0.286	(0.553)	0.257	0.029
98	8.17	0.50	0.286	(0.551)	0.257	0.029
99	8.25	0.50	0.286	(0.548)	0.257	0.029
100	8.33	0.50	0.286	(0.546)	0.257	0.029
101	8.42	0.50	0.286	(0.543)	0.257	0.029
102	8.50	0.50	0.286	(0.541)	0.257	0.029
103	8.58	0.53	0.305	(0.538)	0.274	0.030
104	8.67	0.53	0.305	(0.536)	0.274	0.030
105	8.75	0.53	0.305	(0.533)	0.274	0.030
106	8.83	0.57	0.324	(0.531)	0.291	0.032
107	8.92	0.57	0.324	(0.528)	0.291	0.032
108	9.00	0.57	0.324	(0.526)	0.291	0.032
109	9.08	0.63	0.362	(0.523)	0.326	0.036
110	9.17	0.63	0.362	(0.521)	0.326	0.036
111	9.25	0.63	0.362	(0.518)	0.326	0.036
112	9.33	0.67	0.381	(0.516)	0.343	0.038
113	9.42	0.67	0.381	(0.513)	0.343	0.038
114	9.50	0.67	0.381	(0.511)	0.343	0.038
115	9.58	0.70	0.400	(0.508)	0.360	0.040
116	9.67	0.70	0.400	(0.506)	0.360	0.040
117	9.75	0.70	0.400	(0.503)	0.360	0.040
118	9.83	0.73	0.419	(0.501)	0.377	0.042
119	9.92	0.73	0.419	(0.499)	0.377	0.042
120	10.00	0.73	0.419	(0.496)	0.377	0.042
121	10.08	0.50	0.286	(0.494)	0.257	0.029
122	10.17	0.50	0.286	(0.491)	0.257	0.029
123	10.25	0.50	0.286	(0.489)	0.257	0.029
124	10.33	0.50	0.286	(0.487)	0.257	0.029

125	10.42	0.50	0.286	(0.484)	0.257	0.029
126	10.50	0.50	0.286	(0.482)	0.257	0.029
127	10.58	0.67	0.381	(0.480)	0.343	0.038
128	10.67	0.67	0.381	(0.477)	0.343	0.038
129	10.75	0.67	0.381	(0.475)	0.343	0.038
130	10.83	0.67	0.381	(0.473)	0.343	0.038
131	10.92	0.67	0.381	(0.470)	0.343	0.038
132	11.00	0.67	0.381	(0.468)	0.343	0.038
133	11.08	0.63	0.362	(0.466)	0.326	0.036
134	11.17	0.63	0.362	(0.463)	0.326	0.036
135	11.25	0.63	0.362	(0.461)	0.326	0.036
136	11.33	0.63	0.362	(0.459)	0.326	0.036
137	11.42	0.63	0.362	(0.456)	0.326	0.036
138	11.50	0.63	0.362	(0.454)	0.326	0.036
139	11.58	0.57	0.324	(0.452)	0.291	0.032
140	11.67	0.57	0.324	(0.450)	0.291	0.032
141	11.75	0.57	0.324	(0.447)	0.291	0.032
142	11.83	0.60	0.343	(0.445)	0.308	0.034
143	11.92	0.60	0.343	(0.443)	0.308	0.034
144	12.00	0.60	0.343	(0.441)	0.308	0.034
145	12.08	0.83	0.476	(0.439)	0.428	0.048
146	12.17	0.83	0.476	(0.436)	0.428	0.048
147	12.25	0.83	0.476	(0.434)	0.428	0.048
148	12.33	0.87	0.495	0.432	(0.446)	0.063
149	12.42	0.87	0.495	0.430	(0.446)	0.065
150	12.50	0.87	0.495	0.428	(0.446)	0.067
151	12.58	0.93	0.533	0.426	(0.480)	0.108
152	12.67	0.93	0.533	0.423	(0.480)	0.110
153	12.75	0.93	0.533	0.421	(0.480)	0.112
154	12.83	0.97	0.552	0.419	(0.497)	0.133
155	12.92	0.97	0.552	0.417	(0.497)	0.135
156	13.00	0.97	0.552	0.415	(0.497)	0.137
157	13.08	1.13	0.647	0.413	(0.583)	0.235
158	13.17	1.13	0.647	0.411	(0.583)	0.237
159	13.25	1.13	0.647	0.409	(0.583)	0.239
160	13.33	1.13	0.647	0.407	(0.583)	0.241
161	13.42	1.13	0.647	0.404	(0.583)	0.243
162	13.50	1.13	0.647	0.402	(0.583)	0.245
163	13.58	0.77	0.438	(0.400)	0.394	0.044
164	13.67	0.77	0.438	(0.398)	0.394	0.044
165	13.75	0.77	0.438	(0.396)	0.394	0.044
166	13.83	0.77	0.438	(0.394)	0.394	0.044
167	13.92	0.77	0.438	0.392	(0.394)	0.046
168	14.00	0.77	0.438	0.390	(0.394)	0.048
169	14.08	0.90	0.514	0.388	(0.463)	0.126
170	14.17	0.90	0.514	0.386	(0.463)	0.128
171	14.25	0.90	0.514	0.384	(0.463)	0.130
172	14.33	0.87	0.495	0.382	(0.446)	0.113
173	14.42	0.87	0.495	0.380	(0.446)	0.115
174	14.50	0.87	0.495	0.378	(0.446)	0.117
175	14.58	0.87	0.495	0.377	(0.446)	0.119
176	14.67	0.87	0.495	0.375	(0.446)	0.121
177	14.75	0.87	0.495	0.373	(0.446)	0.122
178	14.83	0.83	0.476	0.371	(0.428)	0.105
179	14.92	0.83	0.476	0.369	(0.428)	0.107
180	15.00	0.83	0.476	0.367	(0.428)	0.109
181	15.08	0.80	0.457	0.365	(0.411)	0.092
182	15.17	0.80	0.457	0.363	(0.411)	0.094
183	15.25	0.80	0.457	0.361	(0.411)	0.096
184	15.33	0.77	0.438	0.360	(0.394)	0.078
185	15.42	0.77	0.438	0.358	(0.394)	0.080
186	15.50	0.77	0.438	0.356	(0.394)	0.082
187	15.58	0.63	0.362	(0.354)	0.326	0.036

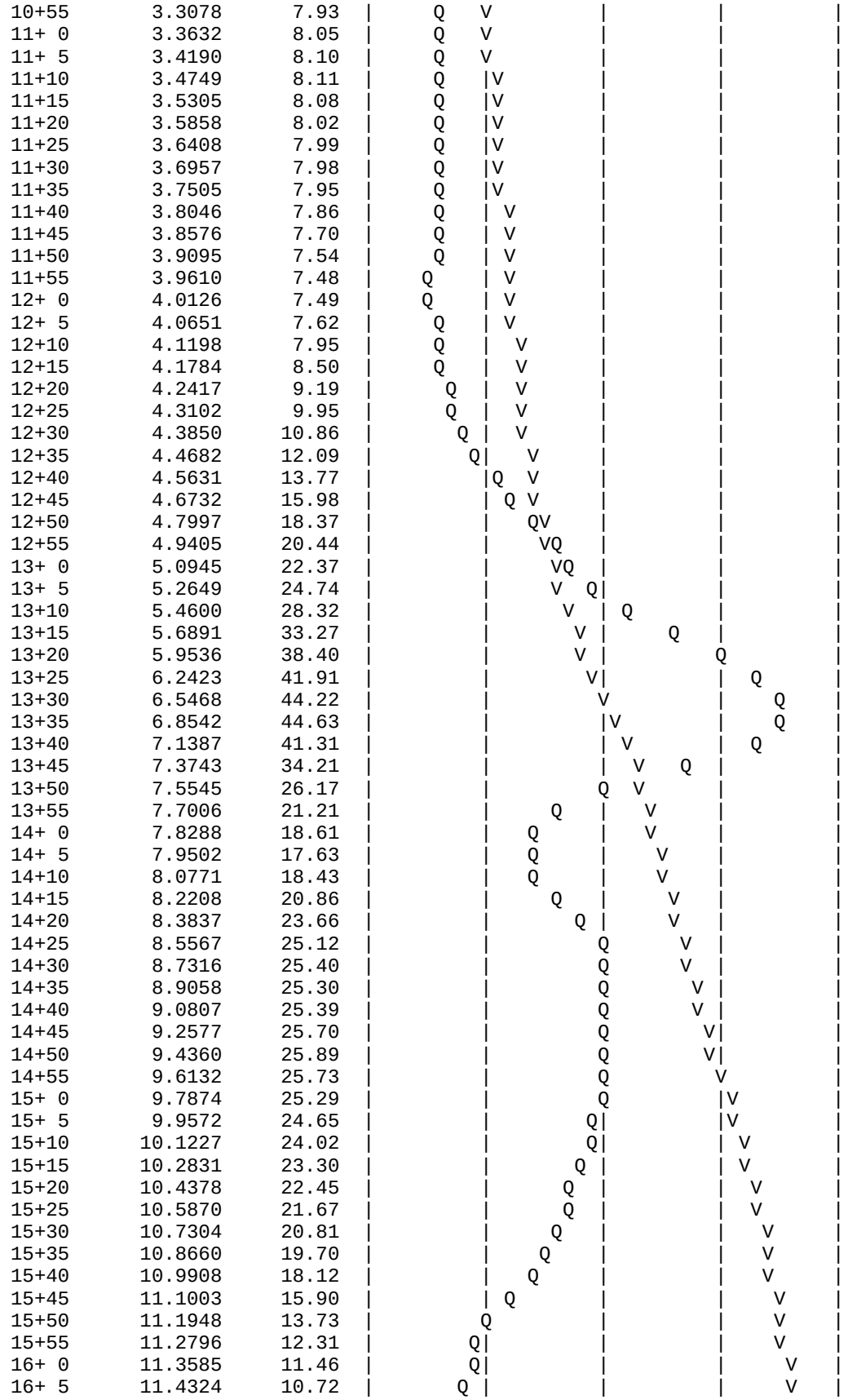
188	15.67	0.63	0.362	(0.352)	0.326	0.036
189	15.75	0.63	0.362	(0.350)	0.326	0.036
190	15.83	0.63	0.362	(0.349)	0.326	0.036
191	15.92	0.63	0.362	(0.347)	0.326	0.036
192	16.00	0.63	0.362	(0.345)	0.326	0.036
193	16.08	0.13	0.076	(0.343)	0.069	0.008
194	16.17	0.13	0.076	(0.342)	0.069	0.008
195	16.25	0.13	0.076	(0.340)	0.069	0.008
196	16.33	0.13	0.076	(0.338)	0.069	0.008
197	16.42	0.13	0.076	(0.336)	0.069	0.008
198	16.50	0.13	0.076	(0.335)	0.069	0.008
199	16.58	0.10	0.057	(0.333)	0.051	0.006
200	16.67	0.10	0.057	(0.331)	0.051	0.006
201	16.75	0.10	0.057	(0.330)	0.051	0.006
202	16.83	0.10	0.057	(0.328)	0.051	0.006
203	16.92	0.10	0.057	(0.326)	0.051	0.006
204	17.00	0.10	0.057	(0.325)	0.051	0.006
205	17.08	0.17	0.095	(0.323)	0.086	0.010
206	17.17	0.17	0.095	(0.321)	0.086	0.010
207	17.25	0.17	0.095	(0.320)	0.086	0.010
208	17.33	0.17	0.095	(0.318)	0.086	0.010
209	17.42	0.17	0.095	(0.316)	0.086	0.010
210	17.50	0.17	0.095	(0.315)	0.086	0.010
211	17.58	0.17	0.095	(0.313)	0.086	0.010
212	17.67	0.17	0.095	(0.312)	0.086	0.010
213	17.75	0.17	0.095	(0.310)	0.086	0.010
214	17.83	0.13	0.076	(0.309)	0.069	0.008
215	17.92	0.13	0.076	(0.307)	0.069	0.008
216	18.00	0.13	0.076	(0.306)	0.069	0.008
217	18.08	0.13	0.076	(0.304)	0.069	0.008
218	18.17	0.13	0.076	(0.303)	0.069	0.008
219	18.25	0.13	0.076	(0.301)	0.069	0.008
220	18.33	0.13	0.076	(0.300)	0.069	0.008
221	18.42	0.13	0.076	(0.298)	0.069	0.008
222	18.50	0.13	0.076	(0.297)	0.069	0.008
223	18.58	0.10	0.057	(0.295)	0.051	0.006
224	18.67	0.10	0.057	(0.294)	0.051	0.006
225	18.75	0.10	0.057	(0.292)	0.051	0.006
226	18.83	0.07	0.038	(0.291)	0.034	0.004
227	18.92	0.07	0.038	(0.290)	0.034	0.004
228	19.00	0.07	0.038	(0.288)	0.034	0.004
229	19.08	0.10	0.057	(0.287)	0.051	0.006
230	19.17	0.10	0.057	(0.286)	0.051	0.006
231	19.25	0.10	0.057	(0.284)	0.051	0.006
232	19.33	0.13	0.076	(0.283)	0.069	0.008
233	19.42	0.13	0.076	(0.282)	0.069	0.008
234	19.50	0.13	0.076	(0.280)	0.069	0.008
235	19.58	0.10	0.057	(0.279)	0.051	0.006
236	19.67	0.10	0.057	(0.278)	0.051	0.006
237	19.75	0.10	0.057	(0.277)	0.051	0.006
238	19.83	0.07	0.038	(0.275)	0.034	0.004
239	19.92	0.07	0.038	(0.274)	0.034	0.004
240	20.00	0.07	0.038	(0.273)	0.034	0.004
241	20.08	0.10	0.057	(0.272)	0.051	0.006
242	20.17	0.10	0.057	(0.270)	0.051	0.006
243	20.25	0.10	0.057	(0.269)	0.051	0.006
244	20.33	0.10	0.057	(0.268)	0.051	0.006
245	20.42	0.10	0.057	(0.267)	0.051	0.006
246	20.50	0.10	0.057	(0.266)	0.051	0.006
247	20.58	0.10	0.057	(0.265)	0.051	0.006
248	20.67	0.10	0.057	(0.264)	0.051	0.006
249	20.75	0.10	0.057	(0.263)	0.051	0.006
250	20.83	0.07	0.038	(0.261)	0.034	0.004

```
251  20.92     0.07      0.038       (  0.260)       0.034        0.004
252  21.00     0.07      0.038       (  0.259)       0.034        0.004
253  21.08     0.10      0.057       (  0.258)       0.051        0.006
254  21.17     0.10      0.057       (  0.257)       0.051        0.006
255  21.25     0.10      0.057       (  0.256)       0.051        0.006
256  21.33     0.07      0.038       (  0.255)       0.034        0.004
257  21.42     0.07      0.038       (  0.254)       0.034        0.004
258  21.50     0.07      0.038       (  0.253)       0.034        0.004
259  21.58     0.10      0.057       (  0.252)       0.051        0.006
260  21.67     0.10      0.057       (  0.252)       0.051        0.006
261  21.75     0.10      0.057       (  0.251)       0.051        0.006
262  21.83     0.07      0.038       (  0.250)       0.034        0.004
263  21.92     0.07      0.038       (  0.249)       0.034        0.004
264  22.00     0.07      0.038       (  0.248)       0.034        0.004
265  22.08     0.10      0.057       (  0.247)       0.051        0.006
266  22.17     0.10      0.057       (  0.246)       0.051        0.006
267  22.25     0.10      0.057       (  0.246)       0.051        0.006
268  22.33     0.07      0.038       (  0.245)       0.034        0.004
269  22.42     0.07      0.038       (  0.244)       0.034        0.004
270  22.50     0.07      0.038       (  0.243)       0.034        0.004
271  22.58     0.07      0.038       (  0.243)       0.034        0.004
272  22.67     0.07      0.038       (  0.242)       0.034        0.004
273  22.75     0.07      0.038       (  0.241)       0.034        0.004
274  22.83     0.07      0.038       (  0.241)       0.034        0.004
275  22.92     0.07      0.038       (  0.240)       0.034        0.004
276  23.00     0.07      0.038       (  0.240)       0.034        0.004
277  23.08     0.07      0.038       (  0.239)       0.034        0.004
278  23.17     0.07      0.038       (  0.238)       0.034        0.004
279  23.25     0.07      0.038       (  0.238)       0.034        0.004
280  23.33     0.07      0.038       (  0.237)       0.034        0.004
281  23.42     0.07      0.038       (  0.237)       0.034        0.004
282  23.50     0.07      0.038       (  0.237)       0.034        0.004
283  23.58     0.07      0.038       (  0.236)       0.034        0.004
284  23.67     0.07      0.038       (  0.236)       0.034        0.004
285  23.75     0.07      0.038       (  0.236)       0.034        0.004
286  23.83     0.07      0.038       (  0.235)       0.034        0.004
287  23.92     0.07      0.038       (  0.235)       0.034        0.004
288  24.00     0.07      0.038       (  0.235)       0.034        0.004
            (Loss Rate Not Used)
    Sum =     100.0                                    Sum =     8.3
      Flood volume = Effective rainfall      0.69(In)
       times area     218.6(Ac.)/[(In)/(Ft.)] =      12.6(Ac.Ft)
      Total soil loss =      4.07(In)
      Total soil loss =    74.116(Ac.Ft)
      Total rainfall =      4.76(In)
      Flood volume =      548505.6 Cubic Feet
      Total soil loss =     3228513.3 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =     44.628(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0       12.5      25.0      37.5      50.0
 ---------------------------------------------------------------------------
   0+ 5       0.0002      0.02  Q         |         |         |         |
   0+10       0.0009      0.11  Q         |         |         |         |
   0+15       0.0028      0.27  Q         |         |         |         |
   0+20       0.0059      0.45  Q         |         |         |         |
```

0+25	0.0100	0.60	Q	|	|	|	|
0+30	0.0152	0.74	Q	|	|	|	|
0+35	0.0211	0.87	Q	|	|	|	|
0+40	0.0277	0.95	Q	|	|	|	|
0+45	0.0346	1.01	Q	|	|	|	|
0+50	0.0419	1.06	Q	|	|	|	|
0+55	0.0498	1.14	Q	|	|	|	|
1+ 0	0.0583	1.24	Q	|	|	|	|
1+ 5	0.0675	1.34	VQ	|	|	|	|
1+10	0.0770	1.37	VQ	|	|	|	|
1+15	0.0861	1.34	VQ	|	|	|	|
1+20	0.0950	1.28	VQ	|	|	|	|
1+25	0.1037	1.26	VQ	|	|	|	|
1+30	0.1123	1.25	VQ	|	|	|	|
1+35	0.1209	1.25	VQ	|	|	|	|
1+40	0.1295	1.25	VQ	|	|	|	|
1+45	0.1381	1.25	VQ	|	|	|	|
1+50	0.1469	1.27	VQ	|	|	|	|
1+55	0.1559	1.31	VQ	|	|	|	|
2+ 0	0.1655	1.39	VQ	|	|	|	|
2+ 5	0.1757	1.48	VQ	|	|	|	|
2+10	0.1862	1.54	VQ	|	|	|	|
2+15	0.1971	1.57	VQ	|	|	|	|
2+20	0.2080	1.59	VQ	|	|	|	|
2+25	0.2191	1.60	VQ	|	|	|	|
2+30	0.2302	1.62	VQ	|	|	|	|
2+35	0.2415	1.64	VQ	|	|	|	|
2+40	0.2531	1.69	VQ	|	|	|	|
2+45	0.2654	1.78	VQ	|	|	|	|
2+50	0.2782	1.87	VQ	|	|	|	|
2+55	0.2915	1.93	VQ	|	|	|	|
3+ 0	0.3050	1.96	VQ	|	|	|	|
3+ 5	0.3186	1.98	|Q	|	|	|	|
3+10	0.3324	2.00	|Q	|	|	|	|
3+15	0.3463	2.02	|Q	|	|	|	|
3+20	0.3603	2.03	|Q	|	|	|	|
3+25	0.3743	2.04	|Q	|	|	|	|
3+30	0.3884	2.05	|Q	|	|	|	|
3+35	0.4026	2.06	|Q	|	|	|	|
3+40	0.4168	2.06	|Q	|	|	|	|
3+45	0.4310	2.07	|Q	|	|	|	|
3+50	0.4454	2.09	|Q	|	|	|	|
3+55	0.4601	2.14	|Q	|	|	|	|
4+ 0	0.4754	2.22	|Q	|	|	|	|
4+ 5	0.4913	2.30	|Q	|	|	|	|
4+10	0.5075	2.36	|Q	|	|	|	|
4+15	0.5240	2.39	|Q	|	|	|	|
4+20	0.5407	2.43	|Q	|	|	|	|
4+25	0.5579	2.49	|Q	|	|	|	|
4+30	0.5756	2.58	|VQ	|	|	|	|
4+35	0.5941	2.68	|VQ	|	|	|	|
4+40	0.6130	2.74	|VQ	|	|	|	|
4+45	0.6321	2.78	| Q	|	|	|	|
4+50	0.6515	2.82	| Q	|	|	|	|
4+55	0.6714	2.88	| Q	|	|	|	|
5+ 0	0.6919	2.98	| Q	|	|	|	|
5+ 5	0.7129	3.05	| Q	|	|	|	|
5+10	0.7338	3.03	| Q	|	|	|	|
5+15	0.7539	2.92	| Q	|	|	|	|
5+20	0.7731	2.79	| Q	|	|	|	|
5+25	0.7920	2.75	| Q	|	|	|	|
5+30	0.8111	2.78	| Q	|	|	|	|
5+35	0.8308	2.85	| Q	|	|	|	|

5+40	0.8510	2.94	Q			
5+45	0.8719	3.03	Q			
5+50	0.8934	3.12	Q			
5+55	0.9154	3.19	Q			
6+ 0	0.9375	3.22	Q			
6+ 5	0.9600	3.26	QV			
6+10	0.9829	3.32	QV			
6+15	1.0064	3.42	QV			
6+20	1.0306	3.51	QV			
6+25	1.0552	3.58	QV			
6+30	1.0801	3.62	QV			
6+35	1.1053	3.65	QV			
6+40	1.1309	3.72	QV			
6+45	1.1572	3.82	Q			
6+50	1.1841	3.91	Q			
6+55	1.2116	3.98	Q			
7+ 0	1.2393	4.02	Q			
7+ 5	1.2672	4.05	QV			
7+10	1.2952	4.07	QV			
7+15	1.3234	4.09	QV			
7+20	1.3518	4.12	QV			
7+25	1.3806	4.18	QV			
7+30	1.4100	4.27	QV			
7+35	1.4401	4.38	QV			
7+40	1.4710	4.48	QV			
7+45	1.5027	4.60	QV			
7+50	1.5352	4.72	QV			
7+55	1.5686	4.84	QV			
8+ 0	1.6028	4.97	Q V			
8+ 5	1.6380	5.11	QV			
8+10	1.6743	5.28	QV			
8+15	1.7122	5.49	QV			
8+20	1.7514	5.70	QV			
8+25	1.7916	5.84	QV			
8+30	1.8324	5.92	QV			
8+35	1.8737	6.00	QV			
8+40	1.9157	6.09	Q V			
8+45	1.9585	6.21	Q V			
8+50	2.0021	6.34	QV			
8+55	2.0467	6.47	QV			
9+ 0	2.0921	6.60	QV			
9+ 5	2.1386	6.75	QV			
9+10	2.1863	6.93	QV			
9+15	2.2355	7.14	Q V			
9+20	2.2862	7.37	Q V			
9+25	2.3382	7.55	QV			
9+30	2.3914	7.72	QV			
9+35	2.4458	7.89	QV			
9+40	2.5011	8.04	QV			
9+45	2.5575	8.19	Q V			
9+50	2.6149	8.34	Q V			
9+55	2.6734	8.48	Q V			
10+ 0	2.7328	8.63	Q V			
10+ 5	2.7926	8.68	Q V			
10+10	2.8509	8.47	Q V			
10+15	2.9060	7.99	Q V			
10+20	2.9573	7.45	Q V			
10+25	3.0062	7.11	Q V			
10+30	3.0540	6.93	Q V			
10+35	3.1013	6.88	Q V			
10+40	3.1496	7.01	Q V			
10+45	3.2002	7.34	Q V			
10+50	3.2532	7.70	Q V			



```
16+10      11.4986      9.62  |      Q  |         |         |     V   |
16+15      11.5545      8.12  |     Q   |         |         |     V   |
16+20      11.5994      6.51  |    Q    |         |         |     V   |
16+25      11.6367      5.43  |   Q     |         |         |     V   |
16+30      11.6692      4.72  |  Q      |         |         |      V  |
16+35      11.6982      4.21  |  Q      |         |         |      V  |
16+40      11.7241      3.76  |  Q      |         |         |      V  |
16+45      11.7473      3.36  | Q       |         |         |      V  |
16+50      11.7679      2.99  | Q       |         |         |      V  |
16+55      11.7864      2.69  | Q       |         |         |      V  |
17+ 0      11.8032      2.44  |Q        |         |         |      V  |
17+ 5      11.8188      2.27  |Q        |         |         |      V  |
17+10      11.8340      2.20  |Q        |         |         |      V  |
17+15      11.8492      2.21  |Q        |         |         |      V  |
17+20      11.8648      2.26  |Q        |         |         |      V  |
17+25      11.8804      2.26  |Q        |         |         |      V  |
17+30      11.8957      2.23  |Q        |         |         |      V  |
17+35      11.9109      2.20  |Q        |         |         |      V  |
17+40      11.9257      2.16  |Q        |         |         |      V  |
17+45      11.9403      2.12  |Q        |         |         |      V  |
17+50      11.9547      2.09  |Q        |         |         |      V  |
17+55      11.9688      2.04  |Q        |         |         |       V |
18+ 0      11.9823      1.96  |Q        |         |         |       V |
18+ 5      11.9951      1.86  |Q        |         |         |       V |
18+10      12.0075      1.80  |Q        |         |         |       V |
18+15      12.0196      1.75  |Q        |         |         |       V |
18+20      12.0315      1.74  |Q        |         |         |       V |
18+25      12.0434      1.73  |Q        |         |         |       V |
18+30      12.0553      1.72  |Q        |         |         |       V |
18+35      12.0670      1.70  |Q        |         |         |       V |
18+40      12.0783      1.65  |Q        |         |         |       V |
18+45      12.0891      1.57  |Q        |         |         |       V |
18+50      12.0993      1.47  |Q        |         |         |       V |
18+55      12.1087      1.37  |Q        |         |         |       V |
19+ 0      12.1174      1.26  |Q        |         |         |       V |
19+ 5      12.1254      1.16  Q         |         |         |       V |
19+10      12.1332      1.14  Q         |         |         |       V |
19+15      12.1413      1.17  Q         |         |         |       V |
19+20      12.1498      1.24  Q         |         |         |       V |
19+25      12.1588      1.31  |Q        |         |         |       V |
19+30      12.1684      1.40  |Q        |         |         |       V |
19+35      12.1785      1.47  |Q        |         |         |       V |
19+40      12.1887      1.48  |Q        |         |         |       V |
19+45      12.1986      1.43  |Q        |         |         |       V |
19+50      12.2079      1.35  |Q        |         |         |       V |
19+55      12.2167      1.27  |Q        |         |         |       V |
20+ 0      12.2248      1.17  Q         |         |         |       V |
20+ 5      12.2323      1.09  Q         |         |         |       V |
20+10      12.2396      1.07  Q         |         |         |       V |
20+15      12.2473      1.11  Q         |         |         |       V |
20+20      12.2554      1.17  Q         |         |         |       V |
20+25      12.2637      1.21  Q         |         |         |       V |
20+30      12.2721      1.22  Q         |         |         |       V |
20+35      12.2806      1.23  Q         |         |         |        V|
20+40      12.2891      1.24  Q         |         |         |        V|
20+45      12.2977      1.24  Q         |         |         |        V|
20+50      12.3061      1.23  Q         |         |         |        V|
20+55      12.3143      1.19  Q         |         |         |        V|
21+ 0      12.3220      1.11  Q         |         |         |        V|
21+ 5      12.3292      1.04  Q         |         |         |        V|
21+10      12.3363      1.03  Q         |         |         |        V|
21+15      12.3437      1.08  Q         |         |         |        V|
21+20      12.3516      1.14  Q         |         |         |        V|
```

21+25	12.3594	1.13	Q	|	|	|	V|
21+30	12.3668	1.07	Q	|	|	|	V|
21+35	12.3737	1.01	Q	|	|	|	V|
21+40	12.3807	1.01	Q	|	|	|	V|
21+45	12.3879	1.06	Q	|	|	|	V|
21+50	12.3956	1.12	Q	|	|	|	V|
21+55	12.4033	1.11	Q	|	|	|	V|
22+ 0	12.4106	1.06	Q	|	|	|	V|
22+ 5	12.4175	1.00	Q	|	|	|	V|
22+10	12.4243	1.00	Q	|	|	|	V|
22+15	12.4316	1.05	Q	|	|	|	V|
22+20	12.4392	1.11	Q	|	|	|	V|
22+25	12.4469	1.11	Q	|	|	|	V|
22+30	12.4541	1.05	Q	|	|	|	V|
22+35	12.4609	0.98	Q	|	|	|	V|
22+40	12.4673	0.94	Q	|	|	|	V|
22+45	12.4736	0.91	Q	|	|	|	V|
22+50	12.4798	0.90	Q	|	|	|	V|
22+55	12.4860	0.89	Q	|	|	|	V|
23+ 0	12.4920	0.88	Q	|	|	|	V|
23+ 5	12.4980	0.87	Q	|	|	|	V|
23+10	12.5040	0.87	Q	|	|	|	V|
23+15	12.5100	0.87	Q	|	|	|	V|
23+20	12.5159	0.86	Q	|	|	|	V|
23+25	12.5218	0.86	Q	|	|	|	V|
23+30	12.5277	0.85	Q	|	|	|	V|
23+35	12.5336	0.85	Q	|	|	|	V|
23+40	12.5395	0.85	Q	|	|	|	V|
23+45	12.5453	0.85	Q	|	|	|	V|
23+50	12.5512	0.85	Q	|	|	|	V|
23+55	12.5570	0.85	Q	|	|	|	V|
24+ 0	12.5628	0.84	Q	|	|	|	V|
24+ 5	12.5684	0.82	Q	|	|	|	V|
24+10	12.5735	0.73	Q	|	|	|	V|
24+15	12.5774	0.57	Q	|	|	|	V|
24+20	12.5802	0.40	Q	|	|	|	V|
24+25	12.5822	0.30	Q	|	|	|	V|
24+30	12.5838	0.23	Q	|	|	|	V|
24+35	12.5851	0.19	Q	|	|	|	V|
24+40	12.5863	0.16	Q	|	|	|	V|
24+45	12.5872	0.14	Q	|	|	|	V|
24+50	12.5880	0.11	Q	|	|	|	V|
24+55	12.5886	0.10	Q	|	|	|	V|
25+ 0	12.5892	0.08	Q	|	|	|	V|
25+ 5	12.5897	0.07	Q	|	|	|	V|
25+10	12.5901	0.06	Q	|	|	|	V|
25+15	12.5905	0.05	Q	|	|	|	V|
25+20	12.5908	0.04	Q	|	|	|	V|
25+25	12.5910	0.04	Q	|	|	|	V|
25+30	12.5912	0.03	Q	|	|	|	V|
25+35	12.5914	0.03	Q	|	|	|	V|
25+40	12.5916	0.02	Q	|	|	|	V|
25+45	12.5917	0.02	Q	|	|	|	V|
25+50	12.5918	0.01	Q	|	|	|	V|
25+55	12.5918	0.01	Q	|	|	|	V|
26+ 0	12.5919	0.01	Q	|	|	|	V|
26+ 5	12.5919	0.01	Q	|	|	|	V|
26+10	12.5920	0.00	Q	|	|	|	V|

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: AUH106EXIST610.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "A"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
10 YEAR - 6 HOUR
FN: AUH106EXIST

Drainage Area = 218.56(Ac.) = 0.342 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 218.56(Ac.) = 0.342 Sq. Mi.
Length along longest watercourse = 7012.00(Ft.)
Length along longest watercourse measured to centroid = 3373.00(Ft.)
Length along longest watercourse = 1.328 Mi.
Length along longest watercourse measured to centroid = 0.639 Mi.
Difference in elevation = 321.00(Ft.)
Slope along watercourse = 241.7114 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.278 Hr.
Lag time = 16.69 Min.
25% of lag time = 4.17 Min.
40% of lag time = 6.68 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	1.40	305.98

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	3.00	655.68

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.400(In)
Area Averaged 100-Year Rainfall = 3.000(In)

Point rain (area averaged) = 2.058(In)
Areal adjustment factor = 99.92 %
Adjusted average point rain = 2.057(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
218.560	60.00	0.000

Total Area Entered = 218.56(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
60.0	60.0	0.470	0.000	0.470	1.000	0.470
					Sum (F) =	0.470

Area averaged mean soil loss (F) (In/Hr) = 0.470
Minimum soil loss rate ((In/Hr)) = 0.235
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

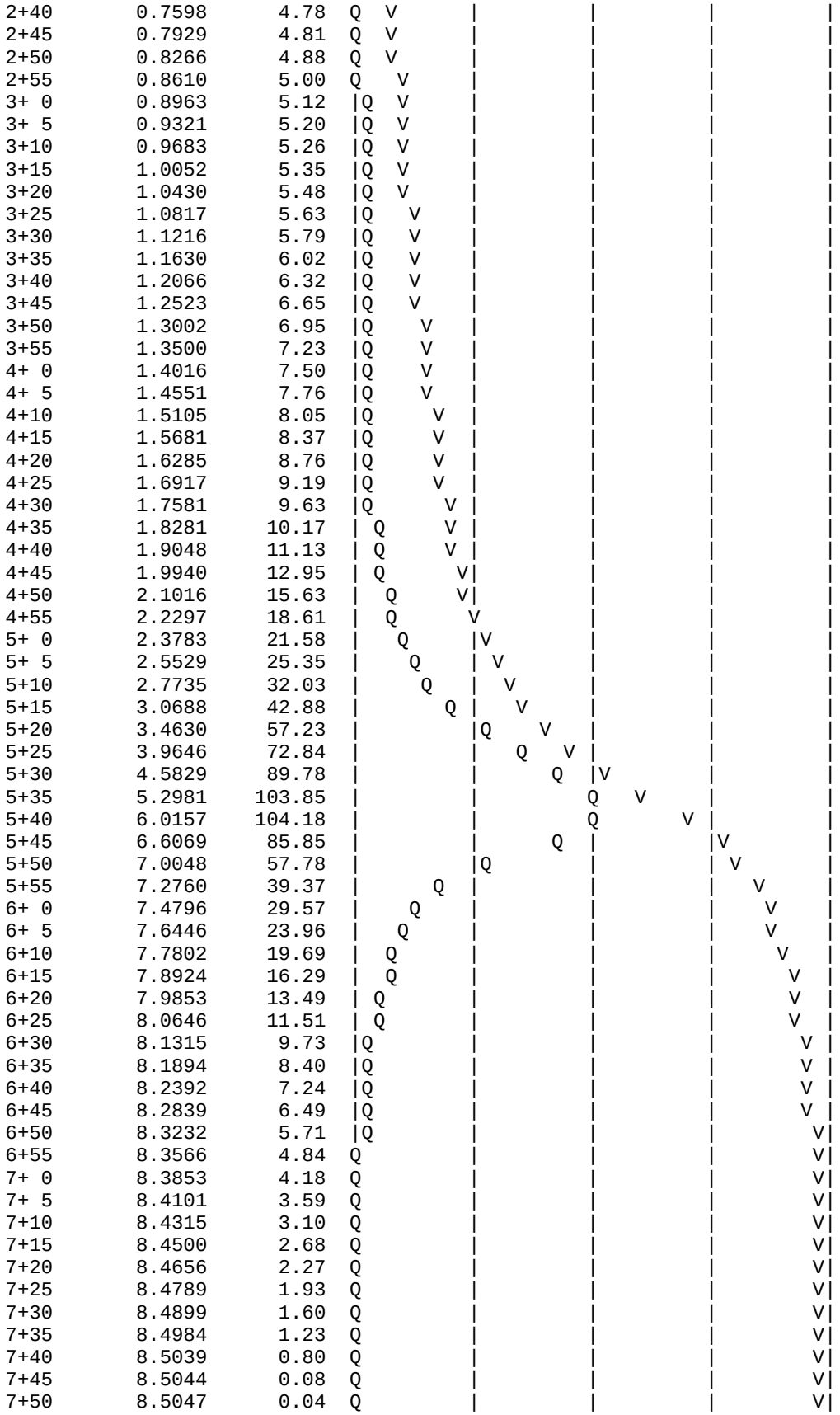
Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	29.957	2.894	6.376
2	0.167	59.914	10.603	23.355
3	0.250	89.872	18.530	40.817
4	0.333	119.829	20.150	44.385
5	0.417	149.786	12.840	28.283
6	0.500	179.743	7.392	16.282
7	0.583	209.701	4.765	10.495
8	0.667	239.658	3.715	8.183
9	0.750	269.615	2.997	6.601
10	0.833	299.572	2.496	5.499
11	0.917	329.529	1.990	4.383
12	1.000	359.487	1.773	3.906
13	1.083	389.444	1.430	3.150
14	1.167	419.401	1.243	2.737
15	1.250	449.358	0.981	2.161
16	1.333	479.316	0.930	2.048
17	1.417	509.273	0.887	1.954
18	1.500	539.230	0.716	1.578
19	1.583	569.187	0.634	1.398
20	1.667	599.144	0.547	1.205
21	1.750	629.102	0.483	1.063
22	1.833	659.059	0.414	0.912
23	1.917	689.016	0.329	0.724
24	2.000	718.973	0.300	0.660
25	2.083	748.931	0.300	0.660
26	2.167	778.888	0.300	0.660
27	2.250	808.845	0.361	0.795
			Sum = 100.000	Sum= 220.268

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.123	(0.470)	0.111	0.012
2	0.17	0.60	0.148	(0.470)	0.133	0.015
3	0.25	0.60	0.148	(0.470)	0.133	0.015
4	0.33	0.60	0.148	(0.470)	0.133	0.015
5	0.42	0.60	0.148	(0.470)	0.133	0.015
6	0.50	0.70	0.173	(0.470)	0.155	0.017
7	0.58	0.70	0.173	(0.470)	0.155	0.017
8	0.67	0.70	0.173	(0.470)	0.155	0.017
9	0.75	0.70	0.173	(0.470)	0.155	0.017
10	0.83	0.70	0.173	(0.470)	0.155	0.017
11	0.92	0.70	0.173	(0.470)	0.155	0.017
12	1.00	0.80	0.197	(0.470)	0.178	0.020
13	1.08	0.80	0.197	(0.470)	0.178	0.020
14	1.17	0.80	0.197	(0.470)	0.178	0.020
15	1.25	0.80	0.197	(0.470)	0.178	0.020
16	1.33	0.80	0.197	(0.470)	0.178	0.020
17	1.42	0.80	0.197	(0.470)	0.178	0.020
18	1.50	0.80	0.197	(0.470)	0.178	0.020
19	1.58	0.80	0.197	(0.470)	0.178	0.020
20	1.67	0.80	0.197	(0.470)	0.178	0.020
21	1.75	0.80	0.197	(0.470)	0.178	0.020
22	1.83	0.80	0.197	(0.470)	0.178	0.020
23	1.92	0.80	0.197	(0.470)	0.178	0.020
24	2.00	0.90	0.222	(0.470)	0.200	0.022
25	2.08	0.80	0.197	(0.470)	0.178	0.020
26	2.17	0.90	0.222	(0.470)	0.200	0.022
27	2.25	0.90	0.222	(0.470)	0.200	0.022
28	2.33	0.90	0.222	(0.470)	0.200	0.022
29	2.42	0.90	0.222	(0.470)	0.200	0.022
30	2.50	0.90	0.222	(0.470)	0.200	0.022
31	2.58	0.90	0.222	(0.470)	0.200	0.022
32	2.67	0.90	0.222	(0.470)	0.200	0.022
33	2.75	1.00	0.247	(0.470)	0.222	0.025
34	2.83	1.00	0.247	(0.470)	0.222	0.025
35	2.92	1.00	0.247	(0.470)	0.222	0.025
36	3.00	1.00	0.247	(0.470)	0.222	0.025
37	3.08	1.00	0.247	(0.470)	0.222	0.025
38	3.17	1.10	0.271	(0.470)	0.244	0.027
39	3.25	1.10	0.271	(0.470)	0.244	0.027
40	3.33	1.10	0.271	(0.470)	0.244	0.027
41	3.42	1.20	0.296	(0.470)	0.267	0.030
42	3.50	1.30	0.321	(0.470)	0.289	0.032
43	3.58	1.40	0.346	(0.470)	0.311	0.035
44	3.67	1.40	0.346	(0.470)	0.311	0.035
45	3.75	1.50	0.370	(0.470)	0.333	0.037
46	3.83	1.50	0.370	(0.470)	0.333	0.037
47	3.92	1.60	0.395	(0.470)	0.355	0.039
48	4.00	1.60	0.395	(0.470)	0.355	0.039
49	4.08	1.70	0.420	(0.470)	0.378	0.042
50	4.17	1.80	0.444	(0.470)	0.400	0.044
51	4.25	1.90	0.469	(0.470)	0.422	0.047
52	4.33	2.00	0.494	(0.470)	0.444	0.049
53	4.42	2.10	0.518	(0.470)	0.466	0.052
54	4.50	2.10	0.518	(0.470)	0.466	0.052
55	4.58	2.20	0.543	0.470	(0.489)	0.073
56	4.67	2.30	0.568	0.470	(0.511)	0.098
57	4.75	2.40	0.592	0.470	(0.533)	0.122
58	4.83	2.40	0.592	0.470	(0.533)	0.122
59	4.92	2.50	0.617	0.470	(0.555)	0.147
60	5.00	2.60	0.642	0.470	(0.578)	0.172
61	5.08	3.10	0.765	0.470	(0.689)	0.295

```
62   5.17     3.60      0.888          0.470    (  0.800)        0.419
63   5.25     3.90      0.963          0.470    (  0.866)        0.493
64   5.33     4.20      1.037          0.470    (  0.933)        0.567
65   5.42     4.70      1.160          0.470    (  1.044)        0.690
66   5.50     5.60      1.382          0.470    (  1.244)        0.912
67   5.58     1.90      0.469       (  0.470)       0.422        0.047
68   5.67     0.90      0.222       (  0.470)       0.200        0.022
69   5.75     0.60      0.148       (  0.470)       0.133        0.015
70   5.83     0.50      0.123       (  0.470)       0.111        0.012
71   5.92     0.30      0.074       (  0.470)       0.067        0.007
72   6.00     0.20      0.049       (  0.470)       0.044        0.005
            (Loss Rate Not Used)
   Sum =     100.0                                    Sum =     5.6
     Flood volume = Effective rainfall      0.47(In)
      times area     218.6(Ac.)/[(In)/(Ft.)] =       8.5(Ac.Ft)
     Total soil loss =      1.59(In)
     Total soil loss =    28.954(Ac.Ft)
     Total rainfall =      2.06(In)
     Flood volume =      370484.2 Cubic Feet
     Total soil loss =     1261250.9 Cubic Feet
     ---------------------------------------------------------------------
      Peak flow rate of this hydrograph =    104.185(CFS)
     ---------------------------------------------------------------------
     +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                         6 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
     ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

     ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       50.0     100.0     150.0     200.0
-------------------------------------------------------------------------
  0+ 5       0.0005      0.08  Q         |         |         |         |
  0+10       0.0032      0.38  Q         |         |         |         |
  0+15       0.0097      0.94  Q         |         |         |         |
  0+20       0.0207      1.59  Q         |         |         |         |
  0+25       0.0348      2.05  Q         |         |         |         |
  0+30       0.0509      2.34  Q         |         |         |         |
  0+35       0.0686      2.57  Q         |         |         |         |
  0+40       0.0878      2.79  Q         |         |         |         |
  0+45       0.1085      3.01  Q         |         |         |         |
  0+50       0.1303      3.16  Q         |         |         |         |
  0+55       0.1528      3.27  Q         |         |         |         |
  1+ 0       0.1760      3.37  Q         |         |         |         |
  1+ 5       0.2000      3.49  Q         |         |         |         |
  1+10       0.2252      3.65  QV        |         |         |         |
  1+15       0.2514      3.81  QV        |         |         |         |
  1+20       0.2784      3.92  QV        |         |         |         |
  1+25       0.3060      4.00  QV        |         |         |         |
  1+30       0.3339      4.06  QV        |         |         |         |
  1+35       0.3622      4.11  QV        |         |         |         |
  1+40       0.3907      4.15  QV        |         |         |         |
  1+45       0.4195      4.18  QV        |         |         |         |
  1+50       0.4485      4.21  Q V       |         |         |         |
  1+55       0.4777      4.23  Q V       |         |         |         |
  2+ 0       0.5071      4.27  Q V       |         |         |         |
  2+ 5       0.5370      4.33  Q V       |         |         |         |
  2+10       0.5673      4.41  Q V       |         |         |         |
  2+15       0.5983      4.50  Q V       |         |         |         |
  2+20       0.6297      4.56  Q V       |         |         |         |
  2+25       0.6617      4.65  Q  V      |         |         |         |
  2+30       0.6942      4.71  Q  V      |         |         |         |
  2+35       0.7269      4.75  Q  V      |         |         |         |
```



```
    7+55       8.5049      0.03  Q         |         |         |        V|
    8+ 0       8.5051      0.02  Q         |         |         |        V|
    8+ 5       8.5051      0.01  Q         |         |         |        V|
    8+10       8.5051      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: AUH103EXIST310.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "A"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
10 YEAR - 3 HOUR
FN: AUH103EXIST

Drainage Area = 218.56(Ac.) = 0.342 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 218.56(Ac.) = 0.342 Sq. Mi.
Length along longest watercourse = 7012.00(Ft.)
Length along longest watercourse measured to centroid = 3373.00(Ft.)
Length along longest watercourse = 1.328 Mi.
Length along longest watercourse measured to centroid = 0.639 Mi.
Difference in elevation = 321.00(Ft.)
Slope along watercourse = 241.7114 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.278 Hr.
Lag time = 16.69 Min.
25% of lag time = 4.17 Min.
40% of lag time = 6.68 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	1.00	218.56

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	2.40	524.54

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.000(In)
Area Averaged 100-Year Rainfall = 2.400(In)

Point rain (area averaged) = 1.576(In)
Areal adjustment factor = 99.90 %
Adjusted average point rain = 1.574(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
218.560	60.00	0.000

Total Area Entered = 218.56(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
60.0	60.0	0.470	0.000	0.470	1.000	0.470
					Sum (F) =	0.470

Area averaged mean soil loss (F) (In/Hr) = 0.470
Minimum soil loss rate ((In/Hr)) = 0.235
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	29.957	2.894	6.376
2	0.167	59.914	10.603	23.355
3	0.250	89.872	18.530	40.817
4	0.333	119.829	20.150	44.385
5	0.417	149.786	12.840	28.283
6	0.500	179.743	7.392	16.282
7	0.583	209.701	4.765	10.495
8	0.667	239.658	3.715	8.183
9	0.750	269.615	2.997	6.601
10	0.833	299.572	2.496	5.499
11	0.917	329.529	1.990	4.383
12	1.000	359.487	1.773	3.906
13	1.083	389.444	1.430	3.150
14	1.167	419.401	1.243	2.737
15	1.250	449.358	0.981	2.161
16	1.333	479.316	0.930	2.048
17	1.417	509.273	0.887	1.954
18	1.500	539.230	0.716	1.578
19	1.583	569.187	0.634	1.398
20	1.667	599.144	0.547	1.205
21	1.750	629.102	0.483	1.063
22	1.833	659.059	0.414	0.912
23	1.917	689.016	0.329	0.724
24	2.000	718.973	0.300	0.660
25	2.083	748.931	0.300	0.660
26	2.167	778.888	0.300	0.660
27	2.250	808.845	0.361	0.795
			Sum = 100.000	Sum= 220.268

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.246	(0.470)	0.221	0.025
2	0.17	1.30	0.246	(0.470)	0.221	0.025
3	0.25	1.10	0.208	(0.470)	0.187	0.021
4	0.33	1.50	0.283	(0.470)	0.255	0.028
5	0.42	1.50	0.283	(0.470)	0.255	0.028
6	0.50	1.80	0.340	(0.470)	0.306	0.034
7	0.58	1.50	0.283	(0.470)	0.255	0.028
8	0.67	1.80	0.340	(0.470)	0.306	0.034
9	0.75	1.80	0.340	(0.470)	0.306	0.034
10	0.83	1.50	0.283	(0.470)	0.255	0.028
11	0.92	1.60	0.302	(0.470)	0.272	0.030
12	1.00	1.80	0.340	(0.470)	0.306	0.034
13	1.08	2.20	0.416	(0.470)	0.374	0.042
14	1.17	2.20	0.416	(0.470)	0.374	0.042
15	1.25	2.20	0.416	(0.470)	0.374	0.042
16	1.33	2.00	0.378	(0.470)	0.340	0.038
17	1.42	2.60	0.491	(0.470)	0.442	0.049
18	1.50	2.70	0.510	(0.470)	0.459	0.051
19	1.58	2.40	0.453	(0.470)	0.408	0.045
20	1.67	2.70	0.510	(0.470)	0.459	0.051
21	1.75	3.30	0.623	0.470	(0.561)	0.154
22	1.83	3.10	0.586	0.470	(0.527)	0.116
23	1.92	2.90	0.548	0.470	(0.493)	0.078
24	2.00	3.00	0.567	0.470	(0.510)	0.097
25	2.08	3.10	0.586	0.470	(0.527)	0.116
26	2.17	4.20	0.794	0.470	(0.714)	0.324
27	2.25	5.00	0.945	0.470	(0.850)	0.475
28	2.33	3.50	0.661	0.470	(0.595)	0.191
29	2.42	6.80	1.285	0.470	(1.156)	0.815
30	2.50	7.30	1.379	0.470	(1.241)	0.909
31	2.58	8.20	1.549	0.470	(1.394)	1.079
32	2.67	5.90	1.115	0.470	(1.003)	0.645
33	2.75	2.00	0.378	(0.470)	0.340	0.038
34	2.83	1.80	0.340	(0.470)	0.306	0.034
35	2.92	1.80	0.340	(0.470)	0.306	0.034
36	3.00	0.60	0.113	(0.470)	0.102	0.011

(Loss Rate Not Used)

Sum = 100.0 Sum = 5.8

Flood volume = Effective rainfall 0.49(In)
times area 218.6(Ac.)/[(In)/(Ft.)] = 8.8(Ac.Ft)
Total soil loss = 1.09(In)
Total soil loss = 19.836(Ac.Ft)
Total rainfall = 1.57(In)
Flood volume = 385080.4 Cubic Feet
Total soil loss = 864056.8 Cubic Feet

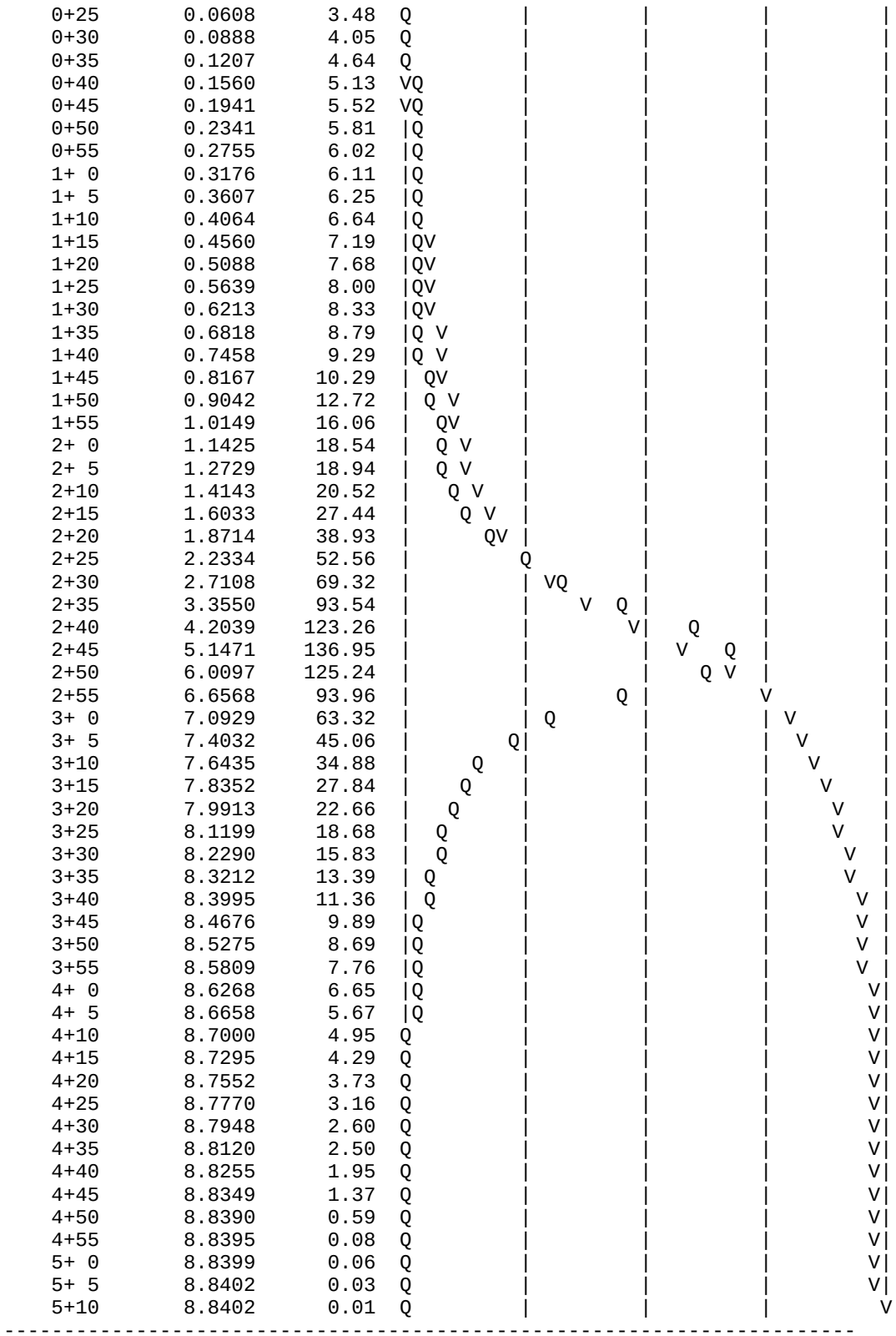
Peak flow rate of this hydrograph = 136.955(CFS)

++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	50.0	100.0	150.0	200.0
0+ 5	0.0011	0.16	Q	|	|	|	|
0+10	0.0061	0.73	Q	|	|	|	|
0+15	0.0179	1.71	Q	|	|	|	|
0+20	0.0369	2.76	Q	|	|	|	|



U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: AUH101EXIST110.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "A"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
10 YEAR - 1 HOUR
FN: AUH101EXIST

Drainage Area = 218.56(Ac.) = 0.342 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 218.56(Ac.) = 0.342 Sq. Mi.
Length along longest watercourse = 7012.00(Ft.)
Length along longest watercourse measured to centroid = 3373.00(Ft.)
Length along longest watercourse = 1.328 Mi.
Length along longest watercourse measured to centroid = 0.639 Mi.
Difference in elevation = 321.00(Ft.)
Slope along watercourse = 241.7114 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.278 Hr.
Lag time = 16.69 Min.
25% of lag time = 4.17 Min.
40% of lag time = 6.68 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	0.55	120.21

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	1.36	297.24

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.550(In)
Area Averaged 100-Year Rainfall = 1.360(In)

Point rain (area averaged) = 0.883(In)
Areal adjustment factor = 99.80 %
Adjusted average point rain = 0.881(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
218.560	60.00	0.000

Total Area Entered = 218.56(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
60.0	60.0	0.470	0.000	0.470	1.000	0.470
					Sum (F) =	0.470

Area averaged mean soil loss (F) (In/Hr) = 0.470
Minimum soil loss rate ((In/Hr)) = 0.235
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.4800

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	29.957	2.894	6.376
2	0.167	59.914	10.603	23.355
3	0.250	89.872	18.530	40.817
4	0.333	119.829	20.150	44.385
5	0.417	149.786	12.840	28.283
6	0.500	179.743	7.392	16.282
7	0.583	209.701	4.765	10.495
8	0.667	239.658	3.715	8.183
9	0.750	269.615	2.997	6.601
10	0.833	299.572	2.496	5.499
11	0.917	329.529	1.990	4.383
12	1.000	359.487	1.773	3.906
13	1.083	389.444	1.430	3.150
14	1.167	419.401	1.243	2.737
15	1.250	449.358	0.981	2.161
16	1.333	479.316	0.930	2.048
17	1.417	509.273	0.887	1.954
18	1.500	539.230	0.716	1.578
19	1.583	569.187	0.634	1.398
20	1.667	599.144	0.547	1.205
21	1.750	629.102	0.483	1.063
22	1.833	659.059	0.414	0.912
23	1.917	689.016	0.329	0.724
24	2.000	718.973	0.300	0.660
25	2.083	748.931	0.300	0.660
26	2.167	778.888	0.300	0.660
27	2.250	808.845	0.361	0.795
			Sum = 100.000	Sum= 220.268

The following loss rate calculations reflect use of the minimum calculated loss

rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1	0.08	4.40	0.465	(0.470)		0.419	0.047
2	0.17	4.50	0.476	(0.470)		0.428	0.048
3	0.25	5.40	0.571	0.470	(	0.514)	0.101
4	0.33	5.40	0.571	0.470	(	0.514)	0.101
5	0.42	5.70	0.603	0.470	(	0.543)	0.133
6	0.50	6.40	0.677	0.470	(	0.609)	0.207
7	0.58	7.90	0.836	0.470	(	0.752)	0.366
8	0.67	9.10	0.963	0.470	(	0.866)	0.493
9	0.75	12.80	1.354	0.470	(	1.219)	0.884
10	0.83	25.60	2.708	0.470	(	2.437)	2.238
11	0.92	7.90	0.836	0.470	(	0.752)	0.366
12	1.00	4.90	0.518	(0.470)		0.466	0.052
	(Loss Rate Not Used)						
Sum =		100.0				Sum =	5.0

Flood volume = Effective rainfall 0.42(In)
times area 218.6(Ac.)/[(In)/(Ft.)] = 7.6(Ac.Ft)
Total soil loss = 0.46(In)
Total soil loss = 8.412(Ac.Ft)
Total rainfall = 0.88(In)
Flood volume = 332913.3 Cubic Feet
Total soil loss = 366437.7 Cubic Feet

Peak flow rate of this hydrograph = 164.322(CFS)

++

1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	50.0	100.0	150.0	200.0
0+ 5	0.0020	0.30	Q	|	|	|	|
0+10	0.0116	1.39	Q	|	|	|	|
0+15	0.0368	3.66	Q	|	|	|	|
0+20	0.0852	7.03	VQ	|	|	|	|
0+25	0.1595	10.79	V Q	|	|	|	|
0+30	0.2640	15.18	|V Q	|	|	|	|
0+35	0.4103	21.24	| V Q	|	|	|	|
0+40	0.6270	31.46	| V Q	|	|	|	|
0+45	0.9608	48.47	| V Q|	|	|	|	|
0+50	1.5241	81.79	| V | Q	|	|	|	|
0+55	2.4174	129.70	| | V | Q	|	|	|	|
1+ 0	3.5491	164.32	| | V |	|	| Q	|	|
1+ 5	4.6257	156.33	| | | V	|	|Q	|	|
1+10	5.3660	107.48	| | |Q V	|	|	|	|
1+15	5.8309	67.51	| | Q	|	V	|	|
1+20	6.1454	45.66	| Q|	|	| V	|	|
1+25	6.3870	35.08	| Q |	|	|	| V	|
1+30	6.5825	28.39	| Q |	|	|	| V	|
1+35	6.7444	23.51	| Q |	|	|	| V	|
1+40	6.8779	19.38	| Q |	|	|	| V	|
1+45	6.9926	16.66	| Q |	|	|	| V	|
1+50	7.0884	13.92	| Q |	|	|	| V	|
1+55	7.1707	11.94	| Q |	|	|	| V	|
2+ 0	7.2400	10.07	| Q |	|	|	| V	|
2+ 5	7.3031	9.16	|Q |	|	|	| V	|
2+10	7.3603	8.31	|Q |	|	|	| V	|

```
    2+15       7.4089      7.06  |Q        |         |         |       V |
    2+20       7.4512      6.14  |Q        |         |         |       V |
    2+25       7.4879      5.32  |Q        |         |         |        V|
    2+30       7.5196      4.60  Q         |         |         |        V|
    2+35       7.5467      3.94  Q         |         |         |        V|
    2+40       7.5696      3.33  Q         |         |         |        V|
    2+45       7.5902      2.99  Q         |         |         |        V|
    2+50       7.6090      2.73  Q         |         |         |        V|
    2+55       7.6260      2.46  Q         |         |         |        V|
    3+ 0       7.6401      2.06  Q         |         |         |        V|
    3+ 5       7.6424      0.33  Q         |         |         |        V|
    3+10       7.6426      0.04  Q         |         |         |         V
---------------------------------------------------------------------------
```

APPENDIX E.3: AREA “A” – EXISTING CONDITION HYDROGRAPH CALCULATIONS 5–YEAR

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: AUH524EXIST245.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "A"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
5 YEAR - 24 HOUR
FN: AUH524EXIST

Drainage Area = 218.56(Ac.) = 0.342 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 218.56(Ac.) = 0.342 Sq. Mi.
Length along longest watercourse = 7012.00(Ft.)
Length along longest watercourse measured to centroid = 3373.00(Ft.)
Length along longest watercourse = 1.328 Mi.
Length along longest watercourse measured to centroid = 0.639 Mi.
Difference in elevation = 321.00(Ft.)
Slope along watercourse = 241.7114 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.278 Hr.
Lag time = 16.69 Min.
25% of lag time = 4.17 Min.
40% of lag time = 6.68 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	2.50	546.40

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	8.00	1748.48

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 2.500(In)
Area Averaged 100-Year Rainfall = 8.000(In)

Point rain (area averaged) = 3.788(In)
Areal adjustment factor = 99.96 %
Adjusted average point rain = 3.787(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
218.560	60.00	0.000

Total Area Entered = 218.56(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
60.0	40.0	0.670	0.000	0.670	1.000	0.670
					Sum (F) =	0.670

Area averaged mean soil loss (F) (In/Hr) = 0.670
Minimum soil loss rate ((In/Hr)) = 0.335
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	29.957	2.894	6.376
2	0.167	59.914	10.603	23.355
3	0.250	89.872	18.530	40.817
4	0.333	119.829	20.150	44.385
5	0.417	149.786	12.840	28.283
6	0.500	179.743	7.392	16.282
7	0.583	209.701	4.765	10.495
8	0.667	239.658	3.715	8.183
9	0.750	269.615	2.997	6.601
10	0.833	299.572	2.496	5.499
11	0.917	329.529	1.990	4.383
12	1.000	359.487	1.773	3.906
13	1.083	389.444	1.430	3.150
14	1.167	419.401	1.243	2.737
15	1.250	449.358	0.981	2.161
16	1.333	479.316	0.930	2.048
17	1.417	509.273	0.887	1.954
18	1.500	539.230	0.716	1.578
19	1.583	569.187	0.634	1.398
20	1.667	599.144	0.547	1.205
21	1.750	629.102	0.483	1.063
22	1.833	659.059	0.414	0.912
23	1.917	689.016	0.329	0.724
24	2.000	718.973	0.300	0.660
25	2.083	748.931	0.300	0.660
26	2.167	778.888	0.300	0.660
27	2.250	808.845	0.361	0.795
			Sum = 100.000	Sum= 220.268

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1	0.08	0.07	0.030	(1.187)		0.027	0.003
2	0.17	0.07	0.030	(1.183)		0.027	0.003
3	0.25	0.07	0.030	(1.178)		0.027	0.003
4	0.33	0.10	0.045	(1.174)		0.041	0.005
5	0.42	0.10	0.045	(1.169)		0.041	0.005
6	0.50	0.10	0.045	(1.164)		0.041	0.005
7	0.58	0.10	0.045	(1.160)		0.041	0.005
8	0.67	0.10	0.045	(1.155)		0.041	0.005
9	0.75	0.10	0.045	(1.151)		0.041	0.005
10	0.83	0.13	0.061	(1.146)		0.055	0.006
11	0.92	0.13	0.061	(1.142)		0.055	0.006
12	1.00	0.13	0.061	(1.137)		0.055	0.006
13	1.08	0.10	0.045	(1.133)		0.041	0.005
14	1.17	0.10	0.045	(1.128)		0.041	0.005
15	1.25	0.10	0.045	(1.124)		0.041	0.005
16	1.33	0.10	0.045	(1.119)		0.041	0.005
17	1.42	0.10	0.045	(1.115)		0.041	0.005
18	1.50	0.10	0.045	(1.111)		0.041	0.005
19	1.58	0.10	0.045	(1.106)		0.041	0.005
20	1.67	0.10	0.045	(1.102)		0.041	0.005
21	1.75	0.10	0.045	(1.097)		0.041	0.005
22	1.83	0.13	0.061	(1.093)		0.055	0.006
23	1.92	0.13	0.061	(1.088)		0.055	0.006
24	2.00	0.13	0.061	(1.084)		0.055	0.006
25	2.08	0.13	0.061	(1.080)		0.055	0.006
26	2.17	0.13	0.061	(1.075)		0.055	0.006
27	2.25	0.13	0.061	(1.071)		0.055	0.006
28	2.33	0.13	0.061	(1.067)		0.055	0.006
29	2.42	0.13	0.061	(1.062)		0.055	0.006
30	2.50	0.13	0.061	(1.058)		0.055	0.006
31	2.58	0.17	0.076	(1.054)		0.068	0.008
32	2.67	0.17	0.076	(1.049)		0.068	0.008
33	2.75	0.17	0.076	(1.045)		0.068	0.008
34	2.83	0.17	0.076	(1.041)		0.068	0.008
35	2.92	0.17	0.076	(1.036)		0.068	0.008
36	3.00	0.17	0.076	(1.032)		0.068	0.008
37	3.08	0.17	0.076	(1.028)		0.068	0.008
38	3.17	0.17	0.076	(1.023)		0.068	0.008
39	3.25	0.17	0.076	(1.019)		0.068	0.008
40	3.33	0.17	0.076	(1.015)		0.068	0.008
41	3.42	0.17	0.076	(1.011)		0.068	0.008
42	3.50	0.17	0.076	(1.006)		0.068	0.008
43	3.58	0.17	0.076	(1.002)		0.068	0.008
44	3.67	0.17	0.076	(0.998)		0.068	0.008
45	3.75	0.17	0.076	(0.994)		0.068	0.008
46	3.83	0.20	0.091	(0.990)		0.082	0.009
47	3.92	0.20	0.091	(0.985)		0.082	0.009
48	4.00	0.20	0.091	(0.981)		0.082	0.009
49	4.08	0.20	0.091	(0.977)		0.082	0.009
50	4.17	0.20	0.091	(0.973)		0.082	0.009
51	4.25	0.20	0.091	(0.969)		0.082	0.009
52	4.33	0.23	0.106	(0.965)		0.095	0.011
53	4.42	0.23	0.106	(0.961)		0.095	0.011
54	4.50	0.23	0.106	(0.956)		0.095	0.011
55	4.58	0.23	0.106	(0.952)		0.095	0.011
56	4.67	0.23	0.106	(0.948)		0.095	0.011
57	4.75	0.23	0.106	(0.944)		0.095	0.011
58	4.83	0.27	0.121	(0.940)		0.109	0.012
59	4.92	0.27	0.121	(0.936)		0.109	0.012
60	5.00	0.27	0.121	(0.932)		0.109	0.012
61	5.08	0.20	0.091	(0.928)		0.082	0.009

62	5.17	0.20	0.091	(0.924)	0.082	0.009
63	5.25	0.20	0.091	(0.920)	0.082	0.009
64	5.33	0.23	0.106	(0.916)	0.095	0.011
65	5.42	0.23	0.106	(0.912)	0.095	0.011
66	5.50	0.23	0.106	(0.908)	0.095	0.011
67	5.58	0.27	0.121	(0.904)	0.109	0.012
68	5.67	0.27	0.121	(0.900)	0.109	0.012
69	5.75	0.27	0.121	(0.896)	0.109	0.012
70	5.83	0.27	0.121	(0.892)	0.109	0.012
71	5.92	0.27	0.121	(0.888)	0.109	0.012
72	6.00	0.27	0.121	(0.884)	0.109	0.012
73	6.08	0.30	0.136	(0.880)	0.123	0.014
74	6.17	0.30	0.136	(0.876)	0.123	0.014
75	6.25	0.30	0.136	(0.872)	0.123	0.014
76	6.33	0.30	0.136	(0.868)	0.123	0.014
77	6.42	0.30	0.136	(0.865)	0.123	0.014
78	6.50	0.30	0.136	(0.861)	0.123	0.014
79	6.58	0.33	0.151	(0.857)	0.136	0.015
80	6.67	0.33	0.151	(0.853)	0.136	0.015
81	6.75	0.33	0.151	(0.849)	0.136	0.015
82	6.83	0.33	0.151	(0.845)	0.136	0.015
83	6.92	0.33	0.151	(0.841)	0.136	0.015
84	7.00	0.33	0.151	(0.838)	0.136	0.015
85	7.08	0.33	0.151	(0.834)	0.136	0.015
86	7.17	0.33	0.151	(0.830)	0.136	0.015
87	7.25	0.33	0.151	(0.826)	0.136	0.015
88	7.33	0.37	0.167	(0.822)	0.150	0.017
89	7.42	0.37	0.167	(0.819)	0.150	0.017
90	7.50	0.37	0.167	(0.815)	0.150	0.017
91	7.58	0.40	0.182	(0.811)	0.164	0.018
92	7.67	0.40	0.182	(0.808)	0.164	0.018
93	7.75	0.40	0.182	(0.804)	0.164	0.018
94	7.83	0.43	0.197	(0.800)	0.177	0.020
95	7.92	0.43	0.197	(0.796)	0.177	0.020
96	8.00	0.43	0.197	(0.793)	0.177	0.020
97	8.08	0.50	0.227	(0.789)	0.204	0.023
98	8.17	0.50	0.227	(0.785)	0.204	0.023
99	8.25	0.50	0.227	(0.782)	0.204	0.023
100	8.33	0.50	0.227	(0.778)	0.204	0.023
101	8.42	0.50	0.227	(0.774)	0.204	0.023
102	8.50	0.50	0.227	(0.771)	0.204	0.023
103	8.58	0.53	0.242	(0.767)	0.218	0.024
104	8.67	0.53	0.242	(0.764)	0.218	0.024
105	8.75	0.53	0.242	(0.760)	0.218	0.024
106	8.83	0.57	0.257	(0.756)	0.232	0.026
107	8.92	0.57	0.257	(0.753)	0.232	0.026
108	9.00	0.57	0.257	(0.749)	0.232	0.026
109	9.08	0.63	0.288	(0.746)	0.259	0.029
110	9.17	0.63	0.288	(0.742)	0.259	0.029
111	9.25	0.63	0.288	(0.739)	0.259	0.029
112	9.33	0.67	0.303	(0.735)	0.273	0.030
113	9.42	0.67	0.303	(0.732)	0.273	0.030
114	9.50	0.67	0.303	(0.728)	0.273	0.030
115	9.58	0.70	0.318	(0.725)	0.286	0.032
116	9.67	0.70	0.318	(0.721)	0.286	0.032
117	9.75	0.70	0.318	(0.718)	0.286	0.032
118	9.83	0.73	0.333	(0.714)	0.300	0.033
119	9.92	0.73	0.333	(0.711)	0.300	0.033
120	10.00	0.73	0.333	(0.707)	0.300	0.033
121	10.08	0.50	0.227	(0.704)	0.204	0.023
122	10.17	0.50	0.227	(0.700)	0.204	0.023
123	10.25	0.50	0.227	(0.697)	0.204	0.023
124	10.33	0.50	0.227	(0.694)	0.204	0.023

125	10.42	0.50	0.227	(0.690)	0.204	0.023
126	10.50	0.50	0.227	(0.687)	0.204	0.023
127	10.58	0.67	0.303	(0.684)	0.273	0.030
128	10.67	0.67	0.303	(0.680)	0.273	0.030
129	10.75	0.67	0.303	(0.677)	0.273	0.030
130	10.83	0.67	0.303	(0.674)	0.273	0.030
131	10.92	0.67	0.303	(0.670)	0.273	0.030
132	11.00	0.67	0.303	(0.667)	0.273	0.030
133	11.08	0.63	0.288	(0.664)	0.259	0.029
134	11.17	0.63	0.288	(0.660)	0.259	0.029
135	11.25	0.63	0.288	(0.657)	0.259	0.029
136	11.33	0.63	0.288	(0.654)	0.259	0.029
137	11.42	0.63	0.288	(0.651)	0.259	0.029
138	11.50	0.63	0.288	(0.647)	0.259	0.029
139	11.58	0.57	0.257	(0.644)	0.232	0.026
140	11.67	0.57	0.257	(0.641)	0.232	0.026
141	11.75	0.57	0.257	(0.638)	0.232	0.026
142	11.83	0.60	0.273	(0.635)	0.245	0.027
143	11.92	0.60	0.273	(0.632)	0.245	0.027
144	12.00	0.60	0.273	(0.628)	0.245	0.027
145	12.08	0.83	0.379	(0.625)	0.341	0.038
146	12.17	0.83	0.379	(0.622)	0.341	0.038
147	12.25	0.83	0.379	(0.619)	0.341	0.038
148	12.33	0.87	0.394	(0.616)	0.354	0.039
149	12.42	0.87	0.394	(0.613)	0.354	0.039
150	12.50	0.87	0.394	(0.610)	0.354	0.039
151	12.58	0.93	0.424	(0.607)	0.382	0.042
152	12.67	0.93	0.424	(0.604)	0.382	0.042
153	12.75	0.93	0.424	(0.601)	0.382	0.042
154	12.83	0.97	0.439	(0.598)	0.395	0.044
155	12.92	0.97	0.439	(0.594)	0.395	0.044
156	13.00	0.97	0.439	(0.591)	0.395	0.044
157	13.08	1.13	0.515	(0.588)	0.463	0.051
158	13.17	1.13	0.515	(0.585)	0.463	0.051
159	13.25	1.13	0.515	(0.583)	0.463	0.051
160	13.33	1.13	0.515	(0.580)	0.463	0.051
161	13.42	1.13	0.515	(0.577)	0.463	0.051
162	13.50	1.13	0.515	(0.574)	0.463	0.051
163	13.58	0.77	0.348	(0.571)	0.314	0.035
164	13.67	0.77	0.348	(0.568)	0.314	0.035
165	13.75	0.77	0.348	(0.565)	0.314	0.035
166	13.83	0.77	0.348	(0.562)	0.314	0.035
167	13.92	0.77	0.348	(0.559)	0.314	0.035
168	14.00	0.77	0.348	(0.556)	0.314	0.035
169	14.08	0.90	0.409	(0.554)	0.368	0.041
170	14.17	0.90	0.409	(0.551)	0.368	0.041
171	14.25	0.90	0.409	(0.548)	0.368	0.041
172	14.33	0.87	0.394	(0.545)	0.354	0.039
173	14.42	0.87	0.394	(0.542)	0.354	0.039
174	14.50	0.87	0.394	(0.540)	0.354	0.039
175	14.58	0.87	0.394	(0.537)	0.354	0.039
176	14.67	0.87	0.394	(0.534)	0.354	0.039
177	14.75	0.87	0.394	(0.531)	0.354	0.039
178	14.83	0.83	0.379	(0.529)	0.341	0.038
179	14.92	0.83	0.379	(0.526)	0.341	0.038
180	15.00	0.83	0.379	(0.523)	0.341	0.038
181	15.08	0.80	0.364	(0.520)	0.327	0.036
182	15.17	0.80	0.364	(0.518)	0.327	0.036
183	15.25	0.80	0.364	(0.515)	0.327	0.036
184	15.33	0.77	0.348	(0.512)	0.314	0.035
185	15.42	0.77	0.348	(0.510)	0.314	0.035
186	15.50	0.77	0.348	(0.507)	0.314	0.035
187	15.58	0.63	0.288	(0.505)	0.259	0.029

188	15.67	0.63	0.288	(0.502)	0.259	0.029
189	15.75	0.63	0.288	(0.499)	0.259	0.029
190	15.83	0.63	0.288	(0.497)	0.259	0.029
191	15.92	0.63	0.288	(0.494)	0.259	0.029
192	16.00	0.63	0.288	(0.492)	0.259	0.029
193	16.08	0.13	0.061	(0.489)	0.055	0.006
194	16.17	0.13	0.061	(0.487)	0.055	0.006
195	16.25	0.13	0.061	(0.484)	0.055	0.006
196	16.33	0.13	0.061	(0.482)	0.055	0.006
197	16.42	0.13	0.061	(0.479)	0.055	0.006
198	16.50	0.13	0.061	(0.477)	0.055	0.006
199	16.58	0.10	0.045	(0.475)	0.041	0.005
200	16.67	0.10	0.045	(0.472)	0.041	0.005
201	16.75	0.10	0.045	(0.470)	0.041	0.005
202	16.83	0.10	0.045	(0.467)	0.041	0.005
203	16.92	0.10	0.045	(0.465)	0.041	0.005
204	17.00	0.10	0.045	(0.463)	0.041	0.005
205	17.08	0.17	0.076	(0.460)	0.068	0.008
206	17.17	0.17	0.076	(0.458)	0.068	0.008
207	17.25	0.17	0.076	(0.456)	0.068	0.008
208	17.33	0.17	0.076	(0.453)	0.068	0.008
209	17.42	0.17	0.076	(0.451)	0.068	0.008
210	17.50	0.17	0.076	(0.449)	0.068	0.008
211	17.58	0.17	0.076	(0.447)	0.068	0.008
212	17.67	0.17	0.076	(0.444)	0.068	0.008
213	17.75	0.17	0.076	(0.442)	0.068	0.008
214	17.83	0.13	0.061	(0.440)	0.055	0.006
215	17.92	0.13	0.061	(0.438)	0.055	0.006
216	18.00	0.13	0.061	(0.436)	0.055	0.006
217	18.08	0.13	0.061	(0.434)	0.055	0.006
218	18.17	0.13	0.061	(0.431)	0.055	0.006
219	18.25	0.13	0.061	(0.429)	0.055	0.006
220	18.33	0.13	0.061	(0.427)	0.055	0.006
221	18.42	0.13	0.061	(0.425)	0.055	0.006
222	18.50	0.13	0.061	(0.423)	0.055	0.006
223	18.58	0.10	0.045	(0.421)	0.041	0.005
224	18.67	0.10	0.045	(0.419)	0.041	0.005
225	18.75	0.10	0.045	(0.417)	0.041	0.005
226	18.83	0.07	0.030	(0.415)	0.027	0.003
227	18.92	0.07	0.030	(0.413)	0.027	0.003
228	19.00	0.07	0.030	(0.411)	0.027	0.003
229	19.08	0.10	0.045	(0.409)	0.041	0.005
230	19.17	0.10	0.045	(0.407)	0.041	0.005
231	19.25	0.10	0.045	(0.405)	0.041	0.005
232	19.33	0.13	0.061	(0.403)	0.055	0.006
233	19.42	0.13	0.061	(0.401)	0.055	0.006
234	19.50	0.13	0.061	(0.400)	0.055	0.006
235	19.58	0.10	0.045	(0.398)	0.041	0.005
236	19.67	0.10	0.045	(0.396)	0.041	0.005
237	19.75	0.10	0.045	(0.394)	0.041	0.005
238	19.83	0.07	0.030	(0.392)	0.027	0.003
239	19.92	0.07	0.030	(0.391)	0.027	0.003
240	20.00	0.07	0.030	(0.389)	0.027	0.003
241	20.08	0.10	0.045	(0.387)	0.041	0.005
242	20.17	0.10	0.045	(0.386)	0.041	0.005
243	20.25	0.10	0.045	(0.384)	0.041	0.005
244	20.33	0.10	0.045	(0.382)	0.041	0.005
245	20.42	0.10	0.045	(0.381)	0.041	0.005
246	20.50	0.10	0.045	(0.379)	0.041	0.005
247	20.58	0.10	0.045	(0.377)	0.041	0.005
248	20.67	0.10	0.045	(0.376)	0.041	0.005
249	20.75	0.10	0.045	(0.374)	0.041	0.005
250	20.83	0.07	0.030	(0.373)	0.027	0.003

```
251  20.92     0.07      0.030       (  0.371)       0.027        0.003
252  21.00     0.07      0.030       (  0.370)       0.027        0.003
253  21.08     0.10      0.045       (  0.368)       0.041        0.005
254  21.17     0.10      0.045       (  0.367)       0.041        0.005
255  21.25     0.10      0.045       (  0.365)       0.041        0.005
256  21.33     0.07      0.030       (  0.364)       0.027        0.003
257  21.42     0.07      0.030       (  0.363)       0.027        0.003
258  21.50     0.07      0.030       (  0.361)       0.027        0.003
259  21.58     0.10      0.045       (  0.360)       0.041        0.005
260  21.67     0.10      0.045       (  0.359)       0.041        0.005
261  21.75     0.10      0.045       (  0.357)       0.041        0.005
262  21.83     0.07      0.030       (  0.356)       0.027        0.003
263  21.92     0.07      0.030       (  0.355)       0.027        0.003
264  22.00     0.07      0.030       (  0.354)       0.027        0.003
265  22.08     0.10      0.045       (  0.352)       0.041        0.005
266  22.17     0.10      0.045       (  0.351)       0.041        0.005
267  22.25     0.10      0.045       (  0.350)       0.041        0.005
268  22.33     0.07      0.030       (  0.349)       0.027        0.003
269  22.42     0.07      0.030       (  0.348)       0.027        0.003
270  22.50     0.07      0.030       (  0.347)       0.027        0.003
271  22.58     0.07      0.030       (  0.346)       0.027        0.003
272  22.67     0.07      0.030       (  0.345)       0.027        0.003
273  22.75     0.07      0.030       (  0.344)       0.027        0.003
274  22.83     0.07      0.030       (  0.343)       0.027        0.003
275  22.92     0.07      0.030       (  0.342)       0.027        0.003
276  23.00     0.07      0.030       (  0.342)       0.027        0.003
277  23.08     0.07      0.030       (  0.341)       0.027        0.003
278  23.17     0.07      0.030       (  0.340)       0.027        0.003
279  23.25     0.07      0.030       (  0.339)       0.027        0.003
280  23.33     0.07      0.030       (  0.339)       0.027        0.003
281  23.42     0.07      0.030       (  0.338)       0.027        0.003
282  23.50     0.07      0.030       (  0.337)       0.027        0.003
283  23.58     0.07      0.030       (  0.337)       0.027        0.003
284  23.67     0.07      0.030       (  0.336)       0.027        0.003
285  23.75     0.07      0.030       (  0.336)       0.027        0.003
286  23.83     0.07      0.030       (  0.335)       0.027        0.003
287  23.92     0.07      0.030       (  0.335)       0.027        0.003
288  24.00     0.07      0.030       (  0.335)       0.027        0.003
            (Loss Rate Not Used)
    Sum =     100.0                                    Sum =     4.5
      Flood volume = Effective rainfall      0.38(In)
       times area     218.6(Ac.)/[(In)/(Ft.)] =       6.9(Ac.Ft)
      Total soil loss =      3.41(In)
      Total soil loss =    62.070(Ac.Ft)
      Total rainfall =      3.79(In)
      Flood volume =      300419.8 Cubic Feet
      Total soil loss =     2703778.6 Cubic Feet
      ------------------------------------------------------------------------
       Peak flow rate of this hydrograph =     10.671(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                      R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
 ------------------------------------------------------------------------
   0+ 5       0.0001      0.02  Q         |         |         |         |
   0+10       0.0008      0.09  Q         |         |         |         |
   0+15       0.0022      0.21  Q         |         |         |         |
   0+20       0.0047      0.36  Q         |         |         |         |
```

0+25	0.0080	0.48	Q	|	|	|	|
0+30	0.0121	0.59	VQ	|	|	|	|
0+35	0.0168	0.69	VQ	|	|	|	|
0+40	0.0220	0.76	VQ	|	|	|	|
0+45	0.0275	0.80	VQ	|	|	|	|
0+50	0.0334	0.84	VQ	|	|	|	|
0+55	0.0396	0.91	VQ	|	|	|	|
1+ 0	0.0464	0.99	VQ	|	|	|	|
1+ 5	0.0537	1.06	V Q	|	|	|	|
1+10	0.0612	1.09	V Q	|	|	|	|
1+15	0.0685	1.06	V Q	|	|	|	|
1+20	0.0756	1.02	V Q	|	|	|	|
1+25	0.0825	1.00	V Q	|	|	|	|
1+30	0.0893	0.99	VQ	|	|	|	|
1+35	0.0961	0.99	VQ	|	|	|	|
1+40	0.1030	1.00	VQ	|	|	|	|
1+45	0.1099	1.00	VQ	|	|	|	|
1+50	0.1168	1.01	V Q	|	|	|	|
1+55	0.1240	1.04	V Q	|	|	|	|
2+ 0	0.1316	1.11	V Q	|	|	|	|
2+ 5	0.1397	1.18	V Q	|	|	|	|
2+10	0.1481	1.22	V Q	|	|	|	|
2+15	0.1567	1.25	V Q	|	|	|	|
2+20	0.1654	1.26	V Q	|	|	|	|
2+25	0.1742	1.28	|VQ	|	|	|	|
2+30	0.1831	1.29	|VQ	|	|	|	|
2+35	0.1921	1.30	|VQ	|	|	|	|
2+40	0.2013	1.35	|VQ	|	|	|	|
2+45	0.2111	1.41	|VQ	|	|	|	|
2+50	0.2213	1.48	|VQ	|	|	|	|
2+55	0.2318	1.53	|V Q	|	|	|	|
3+ 0	0.2426	1.56	|V Q	|	|	|	|
3+ 5	0.2535	1.58	|V Q	|	|	|	|
3+10	0.2644	1.59	|V Q	|	|	|	|
3+15	0.2755	1.60	|V Q	|	|	|	|
3+20	0.2866	1.61	|V Q	|	|	|	|
3+25	0.2977	1.62	|V Q	|	|	|	|
3+30	0.3090	1.63	|V Q	|	|	|	|
3+35	0.3202	1.64	|V Q	|	|	|	|
3+40	0.3315	1.64	|V Q	|	|	|	|
3+45	0.3429	1.65	|V Q	|	|	|	|
3+50	0.3543	1.66	| VQ	|	|	|	|
3+55	0.3660	1.70	| VQ	|	|	|	|
4+ 0	0.3781	1.76	| VQ	|	|	|	|
4+ 5	0.3907	1.83	| VQ	|	|	|	|
4+10	0.4037	1.88	| VQ	|	|	|	|
4+15	0.4168	1.90	| VQ	|	|	|	|
4+20	0.4301	1.93	| VQ	|	|	|	|
4+25	0.4437	1.98	| VQ	|	|	|	|
4+30	0.4579	2.05	| V Q	|	|	|	|
4+35	0.4725	2.13	| V Q	|	|	|	|
4+40	0.4875	2.18	| V Q	|	|	|	|
4+45	0.5028	2.21	| V Q	|	|	|	|
4+50	0.5182	2.24	| VQ	|	|	|	|
4+55	0.5340	2.29	| VQ	|	|	|	|
5+ 0	0.5503	2.37	| VQ	|	|	|	|
5+ 5	0.5670	2.43	| VQ	|	|	|	|
5+10	0.5836	2.41	| VQ	|	|	|	|
5+15	0.5996	2.32	| VQ	|	|	|	|
5+20	0.6149	2.22	| VQ	|	|	|	|
5+25	0.6299	2.19	| VQ	|	|	|	|
5+30	0.6452	2.21	| VQ	|	|	|	|
5+35	0.6608	2.27	| VQ	|	|	|	|

5+40	0.6769	2.33	VQ				
5+45	0.6935	2.41	Q				
5+50	0.7106	2.49	Q				
5+55	0.7281	2.53	VQ				
6+ 0	0.7457	2.56	VQ				
6+ 5	0.7636	2.59	VQ				
6+10	0.7818	2.64	VQ				
6+15	0.8005	2.72	VQ				
6+20	0.8197	2.79	VQ				
6+25	0.8393	2.84	VQ				
6+30	0.8591	2.88	VQ				
6+35	0.8791	2.91	Q				
6+40	0.8995	2.96	Q				
6+45	0.9204	3.03	VQ				
6+50	0.9419	3.11	VQ				
6+55	0.9637	3.17	VQ				
7+ 0	0.9857	3.20	VQ				
7+ 5	1.0079	3.22	VQ				
7+10	1.0302	3.24	VQ				
7+15	1.0526	3.25	Q				
7+20	1.0752	3.28	Q				
7+25	1.0981	3.32	Q				
7+30	1.1215	3.40	Q				
7+35	1.1455	3.48	Q				
7+40	1.1700	3.57	VQ				
7+45	1.1952	3.66	VQ				
7+50	1.2211	3.76	Q				
7+55	1.2476	3.85	Q				
8+ 0	1.2748	3.95	Q				
8+ 5	1.3028	4.07	VQ				
8+10	1.3318	4.20	VQ				
8+15	1.3618	4.37	VQ				
8+20	1.3931	4.53	VQ				
8+25	1.4250	4.64	VQ				
8+30	1.4575	4.71	VQ				
8+35	1.4903	4.77	VQ				
8+40	1.5237	4.85	VQ				
8+45	1.5577	4.94	Q				
8+50	1.5925	5.04	VQ				
8+55	1.6279	5.14	VQ				
9+ 0	1.6641	5.25	VQ				
9+ 5	1.7010	5.37	VQ				
9+10	1.7390	5.51	VQ				
9+15	1.7781	5.68	VQ				
9+20	1.8184	5.86	VQ				
9+25	1.8598	6.01	V Q				
9+30	1.9021	6.14	VQ				
9+35	1.9453	6.27	VQ				
9+40	1.9893	6.39	VQ				
9+45	2.0342	6.51	V Q				
9+50	2.0799	6.63	VQ				
9+55	2.1264	6.75	VQ				
10+ 0	2.1737	6.87	VQ				
10+ 5	2.2212	6.91	VQ				
10+10	2.2676	6.74	Q				
10+15	2.3114	6.36	QV				
10+20	2.3522	5.92	Q V				
10+25	2.3911	5.66	Q V				
10+30	2.4291	5.51	Q V				
10+35	2.4668	5.47	Q V				
10+40	2.5052	5.58	Q V				
10+45	2.5454	5.84	Q V				
10+50	2.5876	6.13	Q V				

10+55	2.6310	6.31	|	| Q V |	|	|
11+ 0	2.6751	6.40	|	| Q V |	|	|
11+ 5	2.7195	6.44	|	| Q V |	|	|
11+10	2.7639	6.45	|	| Q V |	|	|
11+15	2.8081	6.42	|	| Q V |	|	|
11+20	2.8521	6.38	|	| Q V |	|	|
11+25	2.8958	6.35	|	| Q V |	|	|
11+30	2.9395	6.35	|	| Q V |	|	|
11+35	2.9831	6.32	|	| Q V |	|	|
11+40	3.0261	6.25	|	| Q V |	|	|
11+45	3.0683	6.12	|	| Q V |	|	|
11+50	3.1096	6.00	|	|Q V |	|	|
11+55	3.1505	5.95	|	|Q V |	|	|
12+ 0	3.1916	5.96	|	|Q V |	|	|
12+ 5	3.2333	6.06	|	| Q V |	|	|
12+10	3.2769	6.33	|	| Q V|	|	|
12+15	3.3234	6.76	|	| Q V|	|	|
12+20	3.3733	7.24	|	| Q V|	|	|
12+25	3.4255	7.58	|	| Q V|	|	|
12+30	3.4793	7.82	|	| Q V	|	|
12+35	3.5345	8.02	|	| Q V	|	|
12+40	3.5911	8.22	|	| Q V	|	|
12+45	3.6493	8.44	|	| Q |V	|	|
12+50	3.7089	8.65	|	| Q |V	|	|
12+55	3.7697	8.83	|	| Q |V	|	|
13+ 0	3.8316	8.99	|	| Q | V	|	|
13+ 5	3.8948	9.18	|	| Q | V	|	|
13+10	3.9600	9.46	|	| Q | V	|	|
13+15	4.0277	9.84	|	| Q| V	|	|
13+20	4.0982	10.23	|	| Q V	|	|
13+25	4.1705	10.50	|	| Q V	|	|
13+30	4.2439	10.66	|	| |Q V	|	|
13+35	4.3174	10.67	|	| |Q V	|	|
13+40	4.3889	10.37	|	| Q V	|	|
13+45	4.4561	9.77	|	| Q| V	|	|
13+50	4.5188	9.09	|	| Q | V	|	|
13+55	4.5785	8.68	|	| Q | V	|	|
14+ 0	4.6367	8.45	|	| Q | V	|	|
14+ 5	4.6943	8.35	|	| Q | V	|	|
14+10	4.7521	8.40	|	| Q | V	|	|
14+15	4.8111	8.56	|	| Q | V	|	|
14+20	4.8714	8.75	|	| Q | V	|	|
14+25	4.9322	8.84	|	| Q | V	|	|
14+30	4.9930	8.82	|	| Q | V	|	|
14+35	5.0535	8.78	|	| Q | V|	|	|
14+40	5.1138	8.76	|	| Q | V|	|	|
14+45	5.1740	8.75	|	| Q | V	|	|
14+50	5.2341	8.73	|	| Q | V	|	|
14+55	5.2939	8.68	|	| Q | V	|	|
15+ 0	5.3532	8.61	|	| Q | |V	|	|
15+ 5	5.4120	8.53	|	| Q | |V	|	|
15+10	5.4701	8.44	|	| Q | |V	|	|
15+15	5.5277	8.35	|	| Q | | V	|	|
15+20	5.5845	8.25	|	| Q | | V	|	|
15+25	5.6407	8.16	|	| Q | | V	|	|
15+30	5.6962	8.06	|	| Q | | V	|	|
15+35	5.7507	7.92	|	| Q | | V	|	|
15+40	5.8038	7.71	|	| Q | | V	|	|
15+45	5.8549	7.41	|	| Q | | V	|	|
15+50	5.9039	7.12	|	| Q | | V	|	|
15+55	5.9516	6.93	|	| Q | | V	|	|
16+ 0	5.9986	6.81	|	| Q | | V	|	|
16+ 5	6.0439	6.59	|	| Q | | V	|	|

16+10	6.0852	6.00	|	Q |	|	|	V |
16+15	6.1198	5.02	|	Q	|	|	V |
16+20	6.1472	3.97	|	Q	|	|	V |
16+25	6.1698	3.29	|	Q	|	|	V |
16+30	6.1897	2.89	|	Q	|	|	V |
16+35	6.2077	2.61	|	Q	|	|	V |
16+40	6.2240	2.37	|	Q	|	|	V |
16+45	6.2388	2.14	|	Q	|	|	V |
16+50	6.2521	1.93	|	Q	|	|	V |
16+55	6.2643	1.77	|	Q	|	|	V |
17+ 0	6.2756	1.65	|	Q	|	|	V |
17+ 5	6.2864	1.57	|	Q	|	|	V |
17+10	6.2971	1.55	|	Q	|	|	V |
17+15	6.3082	1.61	|	Q	|	|	V |
17+20	6.3198	1.68	|	Q	|	|	V |
17+25	6.3316	1.71	|	Q	|	|	V |
17+30	6.3434	1.71	|	Q	|	|	V |
17+35	6.3551	1.71	|	Q	|	|	V |
17+40	6.3668	1.69	|	Q	|	|	V |
17+45	6.3784	1.68	|	Q	|	|	V |
17+50	6.3899	1.67	|	Q	|	|	V |
17+55	6.4010	1.62	|	Q	|	|	V |
18+ 0	6.4118	1.56	|	Q	|	|	V |
18+ 5	6.4220	1.48	| Q	|	|	|	V |
18+10	6.4318	1.43	| Q	|	|	|	V |
18+15	6.4414	1.39	| Q	|	|	|	V |
18+20	6.4509	1.38	| Q	|	|	|	V |
18+25	6.4604	1.37	| Q	|	|	|	V |
18+30	6.4698	1.37	| Q	|	|	|	V |
18+35	6.4791	1.35	| Q	|	|	|	V |
18+40	6.4882	1.31	| Q	|	|	|	V |
18+45	6.4968	1.25	| Q	|	|	|	V |
18+50	6.5048	1.17	| Q	|	|	|	V |
18+55	6.5123	1.09	| Q	|	|	|	V |
19+ 0	6.5192	1.00	| Q	|	|	|	V |
19+ 5	6.5256	0.93	|Q	|	|	|	V |
19+10	6.5318	0.91	|Q	|	|	|	V |
19+15	6.5382	0.93	|Q	|	|	|	V |
19+20	6.5450	0.98	|Q	|	|	|	V |
19+25	6.5522	1.04	| Q	|	|	|	V |
19+30	6.5598	1.11	| Q	|	|	|	V |
19+35	6.5679	1.17	| Q	|	|	|	V |
19+40	6.5760	1.18	| Q	|	|	|	V |
19+45	6.5838	1.14	| Q	|	|	|	V |
19+50	6.5912	1.08	| Q	|	|	|	V |
19+55	6.5982	1.01	| Q	|	|	|	V |
20+ 0	6.6046	0.93	|Q	|	|	|	V |
20+ 5	6.6106	0.87	|Q	|	|	|	V |
20+10	6.6165	0.85	|Q	|	|	|	V |
20+15	6.6226	0.89	|Q	|	|	|	V |
20+20	6.6290	0.93	|Q	|	|	|	V |
20+25	6.6356	0.96	|Q	|	|	|	V |
20+30	6.6423	0.97	|Q	|	|	|	V |
20+35	6.6491	0.98	|Q	|	|	|	V |
20+40	6.6558	0.98	|Q	|	|	|	V |
20+45	6.6626	0.99	|Q	|	|	|	V |
20+50	6.6694	0.98	|Q	|	|	|	V |
20+55	6.6759	0.94	|Q	|	|	|	V |
21+ 0	6.6820	0.88	|Q	|	|	|	V |
21+ 5	6.6877	0.83	|Q	|	|	|	V |
21+10	6.6933	0.82	|Q	|	|	|	V |
21+15	6.6993	0.86	|Q	|	|	|	V |
21+20	6.7055	0.90	|Q	|	|	|	V |

```
   21+25       6.7117      0.90  |Q        |         |         |       V |
   21+30       6.7176      0.85  |Q        |         |         |       V |
   21+35       6.7231      0.80  |Q        |         |         |       V |
   21+40       6.7286      0.80  |Q        |         |         |        V|
   21+45       6.7344      0.84  |Q        |         |         |        V|
   21+50       6.7405      0.89  |Q        |         |         |        V|
   21+55       6.7466      0.89  |Q        |         |         |        V|
   22+ 0       6.7524      0.84  |Q        |         |         |        V|
   22+ 5       6.7579      0.79  |Q        |         |         |        V|
   22+10       6.7634      0.79  |Q        |         |         |        V|
   22+15       6.7691      0.84  |Q        |         |         |        V|
   22+20       6.7752      0.88  |Q        |         |         |        V|
   22+25       6.7813      0.88  |Q        |         |         |        V|
   22+30       6.7871      0.84  |Q        |         |         |        V|
   22+35       6.7924      0.78  |Q        |         |         |        V|
   22+40       6.7976      0.75  |Q        |         |         |        V|
   22+45       6.8026      0.73  |Q        |         |         |        V|
   22+50       6.8075      0.72  |Q        |         |         |        V|
   22+55       6.8124      0.71  |Q        |         |         |        V|
   23+ 0       6.8172      0.70  |Q        |         |         |        V|
   23+ 5       6.8220      0.70  |Q        |         |         |        V|
   23+10       6.8268      0.69  |Q        |         |         |        V|
   23+15       6.8315      0.69  |Q        |         |         |        V|
   23+20       6.8362      0.69  |Q        |         |         |        V|
   23+25       6.8409      0.68  |Q        |         |         |        V|
   23+30       6.8456      0.68  |Q        |         |         |        V|
   23+35       6.8503      0.68  |Q        |         |         |        V|
   23+40       6.8549      0.68  |Q        |         |         |        V|
   23+45       6.8596      0.68  |Q        |         |         |        V|
   23+50       6.8642      0.67  |Q        |         |         |        V|
   23+55       6.8689      0.67  |Q        |         |         |        V|
   24+ 0       6.8735      0.67  |Q        |         |         |        V|
   24+ 5       6.8780      0.65  |Q        |         |         |        V|
   24+10       6.8820      0.58  |Q        |         |         |        V|
   24+15       6.8851      0.46  Q         |         |         |        V|
   24+20       6.8873      0.32  Q         |         |         |        V|
   24+25       6.8890      0.23  Q         |         |         |        V|
   24+30       6.8902      0.18  Q         |         |         |        V|
   24+35       6.8913      0.15  Q         |         |         |        V|
   24+40       6.8922      0.13  Q         |         |         |        V|
   24+45       6.8929      0.11  Q         |         |         |        V|
   24+50       6.8935      0.09  Q         |         |         |        V|
   24+55       6.8941      0.08  Q         |         |         |        V|
   25+ 0       6.8945      0.07  Q         |         |         |        V|
   25+ 5       6.8949      0.06  Q         |         |         |        V|
   25+10       6.8952      0.05  Q         |         |         |        V|
   25+15       6.8955      0.04  Q         |         |         |        V|
   25+20       6.8958      0.04  Q         |         |         |        V|
   25+25       6.8960      0.03  Q         |         |         |        V|
   25+30       6.8961      0.02  Q         |         |         |        V|
   25+35       6.8963      0.02  Q         |         |         |        V|
   25+40       6.8964      0.02  Q         |         |         |        V|
   25+45       6.8965      0.01  Q         |         |         |        V|
   25+50       6.8965      0.01  Q         |         |         |        V|
   25+55       6.8966      0.01  Q         |         |         |        V|
   26+ 0       6.8966      0.01  Q         |         |         |        V|
   26+ 5       6.8967      0.00  Q         |         |         |        V|
   26+10       6.8967      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: AUH56EXIST65.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "A"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
5 YEAR - 6 HOUR
FN: AUH56EXIST

Drainage Area = 218.56(Ac.) = 0.342 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 218.56(Ac.) = 0.342 Sq. Mi.
Length along longest watercourse = 7012.00(Ft.)
Length along longest watercourse measured to centroid = 3373.00(Ft.)
Length along longest watercourse = 1.328 Mi.
Length along longest watercourse measured to centroid = 0.639 Mi.
Difference in elevation = 321.00(Ft.)
Slope along watercourse = 241.7114 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.278 Hr.
Lag time = 16.69 Min.
25% of lag time = 4.17 Min.
40% of lag time = 6.68 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	1.40	305.98

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	3.00	655.68

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 1.400(In)
Area Averaged 100-Year Rainfall = 3.000(In)

Point rain (area averaged) = 1.775(In)
Areal adjustment factor = 99.92 %
Adjusted average point rain = 1.773(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
218.560	60.00	0.000

Total Area Entered = 218.56(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
60.0	40.0	0.670	0.000	0.670	1.000	0.670
					Sum (F) =	0.670

Area averaged mean soil loss (F) (In/Hr) = 0.670
Minimum soil loss rate ((In/Hr)) = 0.335
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

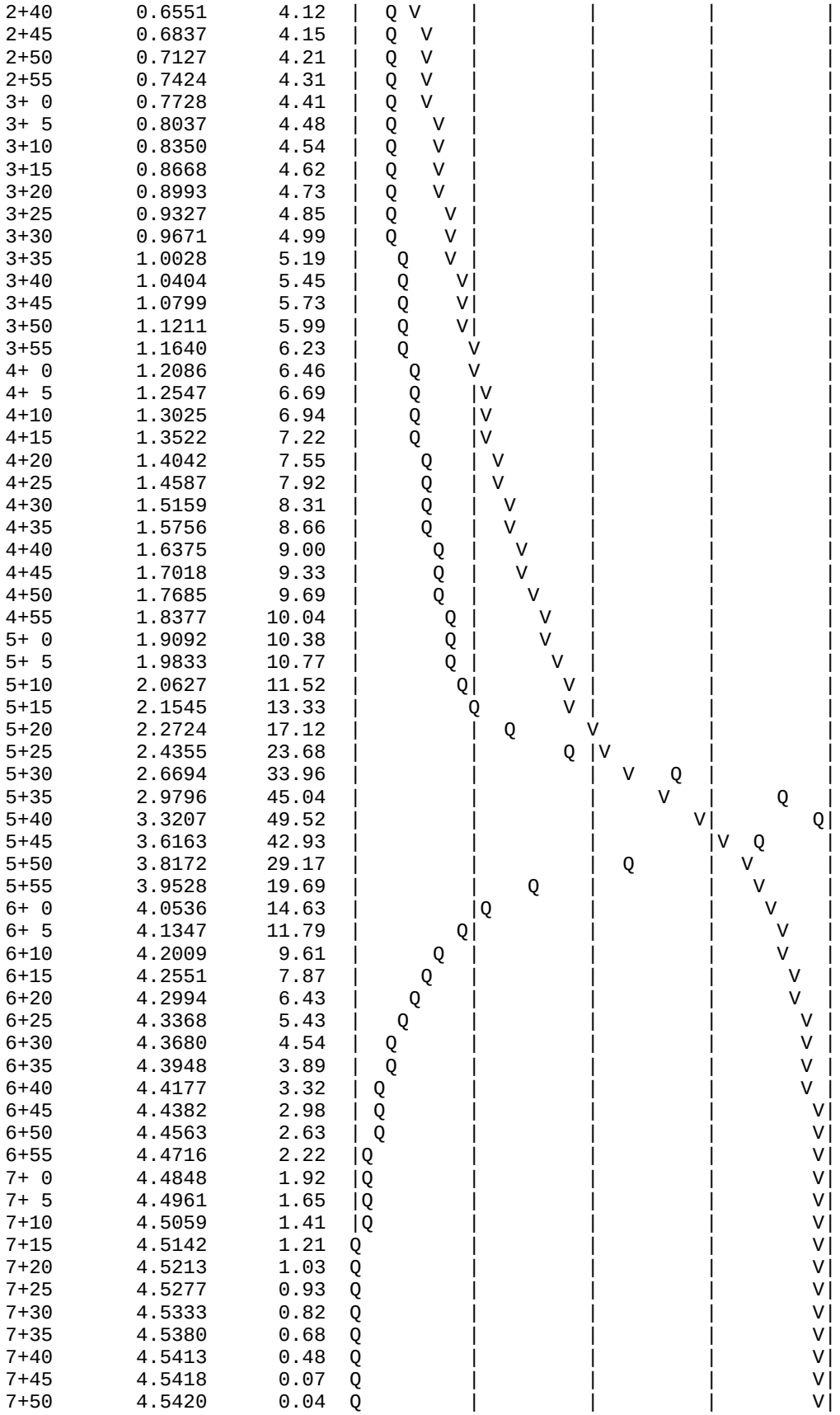
Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	29.957	2.894	6.376
2	0.167	59.914	10.603	23.355
3	0.250	89.872	18.530	40.817
4	0.333	119.829	20.150	44.385
5	0.417	149.786	12.840	28.283
6	0.500	179.743	7.392	16.282
7	0.583	209.701	4.765	10.495
8	0.667	239.658	3.715	8.183
9	0.750	269.615	2.997	6.601
10	0.833	299.572	2.496	5.499
11	0.917	329.529	1.990	4.383
12	1.000	359.487	1.773	3.906
13	1.083	389.444	1.430	3.150
14	1.167	419.401	1.243	2.737
15	1.250	449.358	0.981	2.161
16	1.333	479.316	0.930	2.048
17	1.417	509.273	0.887	1.954
18	1.500	539.230	0.716	1.578
19	1.583	569.187	0.634	1.398
20	1.667	599.144	0.547	1.205
21	1.750	629.102	0.483	1.063
22	1.833	659.059	0.414	0.912
23	1.917	689.016	0.329	0.724
24	2.000	718.973	0.300	0.660
25	2.083	748.931	0.300	0.660
26	2.167	778.888	0.300	0.660
27	2.250	808.845	0.361	0.795
			Sum = 100.000	Sum= 220.268

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1	0.08	0.50	0.106	(0.670)		0.096	0.011
2	0.17	0.60	0.128	(0.670)		0.115	0.013
3	0.25	0.60	0.128	(0.670)		0.115	0.013
4	0.33	0.60	0.128	(0.670)		0.115	0.013
5	0.42	0.60	0.128	(0.670)		0.115	0.013
6	0.50	0.70	0.149	(0.670)		0.134	0.015
7	0.58	0.70	0.149	(0.670)		0.134	0.015
8	0.67	0.70	0.149	(0.670)		0.134	0.015
9	0.75	0.70	0.149	(0.670)		0.134	0.015
10	0.83	0.70	0.149	(0.670)		0.134	0.015
11	0.92	0.70	0.149	(0.670)		0.134	0.015
12	1.00	0.80	0.170	(0.670)		0.153	0.017
13	1.08	0.80	0.170	(0.670)		0.153	0.017
14	1.17	0.80	0.170	(0.670)		0.153	0.017
15	1.25	0.80	0.170	(0.670)		0.153	0.017
16	1.33	0.80	0.170	(0.670)		0.153	0.017
17	1.42	0.80	0.170	(0.670)		0.153	0.017
18	1.50	0.80	0.170	(0.670)		0.153	0.017
19	1.58	0.80	0.170	(0.670)		0.153	0.017
20	1.67	0.80	0.170	(0.670)		0.153	0.017
21	1.75	0.80	0.170	(0.670)		0.153	0.017
22	1.83	0.80	0.170	(0.670)		0.153	0.017
23	1.92	0.80	0.170	(0.670)		0.153	0.017
24	2.00	0.90	0.192	(0.670)		0.172	0.019
25	2.08	0.80	0.170	(0.670)		0.153	0.017
26	2.17	0.90	0.192	(0.670)		0.172	0.019
27	2.25	0.90	0.192	(0.670)		0.172	0.019
28	2.33	0.90	0.192	(0.670)		0.172	0.019
29	2.42	0.90	0.192	(0.670)		0.172	0.019
30	2.50	0.90	0.192	(0.670)		0.172	0.019
31	2.58	0.90	0.192	(0.670)		0.172	0.019
32	2.67	0.90	0.192	(0.670)		0.172	0.019
33	2.75	1.00	0.213	(0.670)		0.192	0.021
34	2.83	1.00	0.213	(0.670)		0.192	0.021
35	2.92	1.00	0.213	(0.670)		0.192	0.021
36	3.00	1.00	0.213	(0.670)		0.192	0.021
37	3.08	1.00	0.213	(0.670)		0.192	0.021
38	3.17	1.10	0.234	(0.670)		0.211	0.023
39	3.25	1.10	0.234	(0.670)		0.211	0.023
40	3.33	1.10	0.234	(0.670)		0.211	0.023
41	3.42	1.20	0.255	(0.670)		0.230	0.026
42	3.50	1.30	0.277	(0.670)		0.249	0.028
43	3.58	1.40	0.298	(0.670)		0.268	0.030
44	3.67	1.40	0.298	(0.670)		0.268	0.030
45	3.75	1.50	0.319	(0.670)		0.287	0.032
46	3.83	1.50	0.319	(0.670)		0.287	0.032
47	3.92	1.60	0.340	(0.670)		0.306	0.034
48	4.00	1.60	0.340	(0.670)		0.306	0.034
49	4.08	1.70	0.362	(0.670)		0.326	0.036
50	4.17	1.80	0.383	(0.670)		0.345	0.038
51	4.25	1.90	0.404	(0.670)		0.364	0.040
52	4.33	2.00	0.426	(0.670)		0.383	0.043
53	4.42	2.10	0.447	(0.670)		0.402	0.045
54	4.50	2.10	0.447	(0.670)		0.402	0.045
55	4.58	2.20	0.468	(0.670)		0.421	0.047
56	4.67	2.30	0.489	(0.670)		0.441	0.049
57	4.75	2.40	0.511	(0.670)		0.460	0.051
58	4.83	2.40	0.511	(0.670)		0.460	0.051
59	4.92	2.50	0.532	(0.670)		0.479	0.053
60	5.00	2.60	0.553	(0.670)		0.498	0.055
61	5.08	3.10	0.660	(0.670)		0.594	0.066

```
62   5.17     3.60      0.766          0.670    (  0.690)        0.096
63   5.25     3.90      0.830          0.670    (  0.747)        0.160
64   5.33     4.20      0.894          0.670    (  0.804)        0.224
65   5.42     4.70      1.000          0.670    (  0.900)        0.330
66   5.50     5.60      1.192          0.670    (  1.073)        0.522
67   5.58     1.90      0.404       (  0.670)       0.364        0.040
68   5.67     0.90      0.192       (  0.670)       0.172        0.019
69   5.75     0.60      0.128       (  0.670)       0.115        0.013
70   5.83     0.50      0.106       (  0.670)       0.096        0.011
71   5.92     0.30      0.064       (  0.670)       0.057        0.006
72   6.00     0.20      0.043       (  0.670)       0.038        0.004
            (Loss Rate Not Used)
   Sum =     100.0                                    Sum =     3.0
    Flood volume = Effective rainfall      0.25(In)
     times area     218.6(Ac.)/[(In)/(Ft.)] =       4.5(Ac.Ft)
    Total soil loss =      1.52(In)
    Total soil loss =    27.758(Ac.Ft)
    Total rainfall =      1.77(In)
    Flood volume =      197866.8 Cubic Feet
    Total soil loss =     1209120.7 Cubic Feet
    ---------------------------------------------------------------------
     Peak flow rate of this hydrograph =     49.524(CFS)
    ---------------------------------------------------------------------
    +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        6 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
    ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

    ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       12.5      25.0      37.5      50.0
-------------------------------------------------------------------------
  0+ 5       0.0005      0.07  Q         |         |         |         |
  0+10       0.0027      0.33  Q         |         |         |         |
  0+15       0.0083      0.81  Q         |         |         |         |
  0+20       0.0178      1.37  VQ        |         |         |         |
  0+25       0.0300      1.77  VQ        |         |         |         |
  0+30       0.0439      2.02  VQ        |         |         |         |
  0+35       0.0591      2.21  VQ        |         |         |         |
  0+40       0.0757      2.41  VQ        |         |         |         |
  0+45       0.0936      2.59  V Q       |         |         |         |
  0+50       0.1123      2.72  V Q       |         |         |         |
  0+55       0.1317      2.82  |VQ       |         |         |         |
  1+ 0       0.1517      2.90  |VQ       |         |         |         |
  1+ 5       0.1725      3.01  |VQ       |         |         |         |
  1+10       0.1942      3.15  |VQ       |         |         |         |
  1+15       0.2168      3.28  |VQ       |         |         |         |
  1+20       0.2401      3.38  | Q       |         |         |         |
  1+25       0.2638      3.45  | Q       |         |         |         |
  1+30       0.2879      3.50  | Q       |         |         |         |
  1+35       0.3123      3.54  | Q       |         |         |         |
  1+40       0.3369      3.57  | Q       |         |         |         |
  1+45       0.3617      3.60  | QV      |         |         |         |
  1+50       0.3867      3.63  | QV      |         |         |         |
  1+55       0.4119      3.65  | QV      |         |         |         |
  2+ 0       0.4373      3.68  | QV      |         |         |         |
  2+ 5       0.4630      3.74  | Q V     |         |         |         |
  2+10       0.4892      3.80  |  QV     |         |         |         |
  2+15       0.5159      3.88  |  QV     |         |         |         |
  2+20       0.5430      3.94  |  QV     |         |         |         |
  2+25       0.5706      4.01  |  Q V    |         |         |         |
  2+30       0.5986      4.06  |  Q V    |         |         |         |
  2+35       0.6268      4.10  |  Q V    |         |         |         |
```



```
    7+55       4.5422      0.02  Q         |         |         |        V|
    8+ 0       4.5423      0.02  Q         |         |         |        V|
    8+ 5       4.5424      0.01  Q         |         |         |        V|
    8+10       4.5424      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: AUH53EXIST35.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "A"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
5 YEAR - 3 HOUR
FN: AUH53EXIST

Drainage Area = 218.56(Ac.) = 0.342 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 218.56(Ac.) = 0.342 Sq. Mi.
Length along longest watercourse = 7012.00(Ft.)
Length along longest watercourse measured to centroid = 3373.00(Ft.)
Length along longest watercourse = 1.328 Mi.
Length along longest watercourse measured to centroid = 0.639 Mi.
Difference in elevation = 321.00(Ft.)
Slope along watercourse = 241.7114 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.278 Hr.
Lag time = 16.69 Min.
25% of lag time = 4.17 Min.
40% of lag time = 6.68 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	1.00	218.56

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	2.40	524.54

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 1.000(In)
Area Averaged 100-Year Rainfall = 2.400(In)

Point rain (area averaged) = 1.328(In)
Areal adjustment factor = 99.90 %
Adjusted average point rain = 1.327(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
218.560	60.00	0.000

Total Area Entered = 218.56(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
60.0	40.0	0.670	0.000	0.670	1.000	0.670
					Sum (F) =	0.670

Area averaged mean soil loss (F) (In/Hr) = 0.670
Minimum soil loss rate ((In/Hr)) = 0.335
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	29.957	2.894	6.376
2	0.167	59.914	10.603	23.355
3	0.250	89.872	18.530	40.817
4	0.333	119.829	20.150	44.385
5	0.417	149.786	12.840	28.283
6	0.500	179.743	7.392	16.282
7	0.583	209.701	4.765	10.495
8	0.667	239.658	3.715	8.183
9	0.750	269.615	2.997	6.601
10	0.833	299.572	2.496	5.499
11	0.917	329.529	1.990	4.383
12	1.000	359.487	1.773	3.906
13	1.083	389.444	1.430	3.150
14	1.167	419.401	1.243	2.737
15	1.250	449.358	0.981	2.161
16	1.333	479.316	0.930	2.048
17	1.417	509.273	0.887	1.954
18	1.500	539.230	0.716	1.578
19	1.583	569.187	0.634	1.398
20	1.667	599.144	0.547	1.205
21	1.750	629.102	0.483	1.063
22	1.833	659.059	0.414	0.912
23	1.917	689.016	0.329	0.724
24	2.000	718.973	0.300	0.660
25	2.083	748.931	0.300	0.660
26	2.167	778.888	0.300	0.660
27	2.250	808.845	0.361	0.795
			Sum = 100.000	Sum= 220.268

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.207	(0.670)	0.186	0.021
2	0.17	1.30	0.207	(0.670)	0.186	0.021
3	0.25	1.10	0.175	(0.670)	0.158	0.018
4	0.33	1.50	0.239	(0.670)	0.215	0.024
5	0.42	1.50	0.239	(0.670)	0.215	0.024
6	0.50	1.80	0.287	(0.670)	0.258	0.029
7	0.58	1.50	0.239	(0.670)	0.215	0.024
8	0.67	1.80	0.287	(0.670)	0.258	0.029
9	0.75	1.80	0.287	(0.670)	0.258	0.029
10	0.83	1.50	0.239	(0.670)	0.215	0.024
11	0.92	1.60	0.255	(0.670)	0.229	0.025
12	1.00	1.80	0.287	(0.670)	0.258	0.029
13	1.08	2.20	0.350	(0.670)	0.315	0.035
14	1.17	2.20	0.350	(0.670)	0.315	0.035
15	1.25	2.20	0.350	(0.670)	0.315	0.035
16	1.33	2.00	0.318	(0.670)	0.287	0.032
17	1.42	2.60	0.414	(0.670)	0.373	0.041
18	1.50	2.70	0.430	(0.670)	0.387	0.043
19	1.58	2.40	0.382	(0.670)	0.344	0.038
20	1.67	2.70	0.430	(0.670)	0.387	0.043
21	1.75	3.30	0.525	(0.670)	0.473	0.053
22	1.83	3.10	0.494	(0.670)	0.444	0.049
23	1.92	2.90	0.462	(0.670)	0.416	0.046
24	2.00	3.00	0.478	(0.670)	0.430	0.048
25	2.08	3.10	0.494	(0.670)	0.444	0.049
26	2.17	4.20	0.669	(0.670)	0.602	0.067
27	2.25	5.00	0.796	0.670	(0.716)	0.126
28	2.33	3.50	0.557	(0.670)	0.501	0.056
29	2.42	6.80	1.083	0.670	(0.974)	0.413
30	2.50	7.30	1.162	0.670	(1.046)	0.492
31	2.58	8.20	1.305	0.670	(1.175)	0.636
32	2.67	5.90	0.939	0.670	(0.845)	0.269
33	2.75	2.00	0.318	(0.670)	0.287	0.032
34	2.83	1.80	0.287	(0.670)	0.258	0.029
35	2.92	1.80	0.287	(0.670)	0.258	0.029
36	3.00	0.60	0.096	(0.670)	0.086	0.010
		(Loss Rate Not Used)				
Sum =		100.0			Sum =	3.0

Flood volume = Effective rainfall 0.25(In)
times area 218.6(Ac.)/[(In)/(Ft.)] = 4.6(Ac.Ft)
Total soil loss = 1.08(In)
Total soil loss = 19.610(Ac.Ft)
Total rainfall = 1.33(In)
Flood volume = 198330.9 Cubic Feet
Total soil loss = 854192.6 Cubic Feet

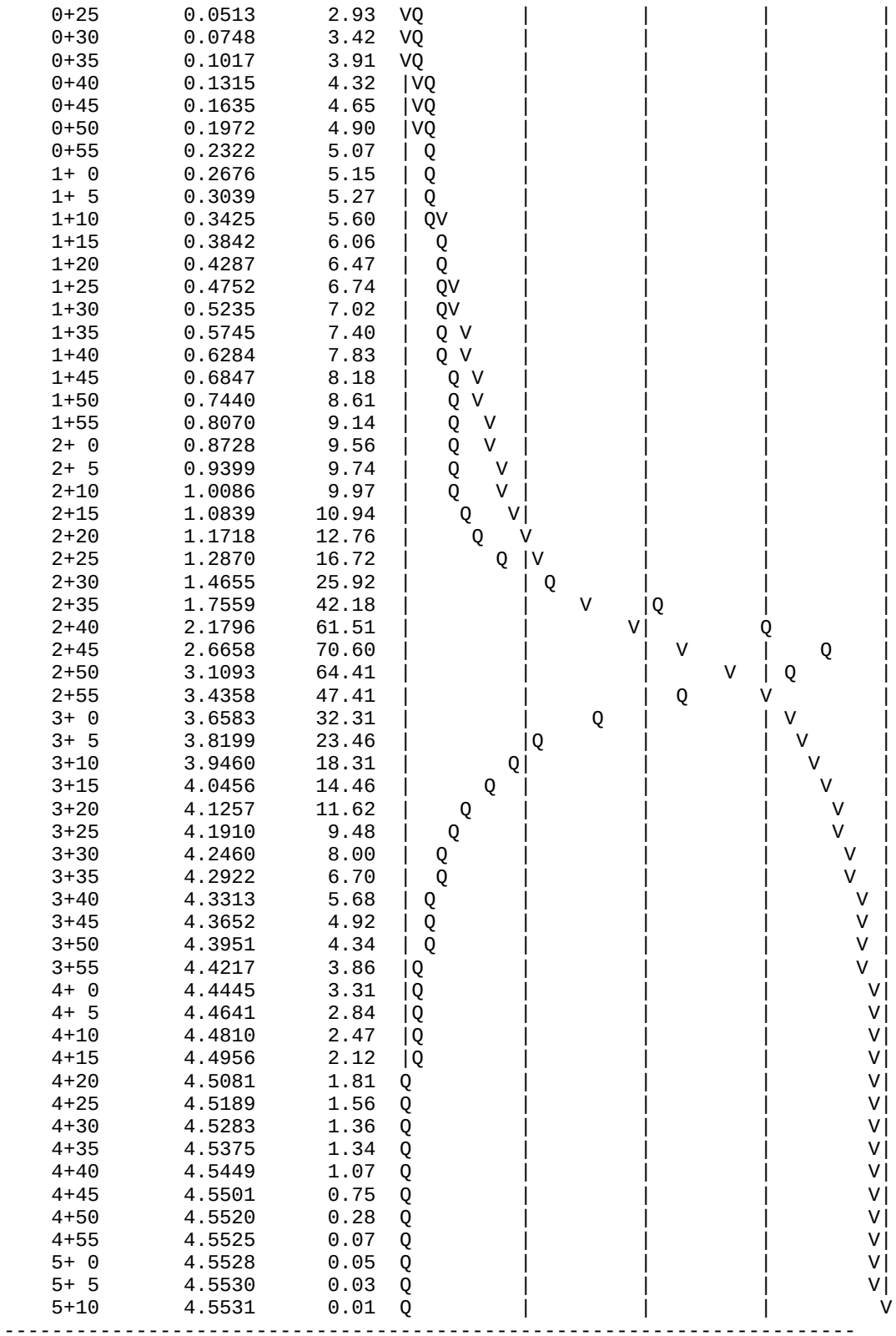
Peak flow rate of this hydrograph = 70.596(CFS)

++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	20.0	40.0	60.0	80.0
0+ 5	0.0009	0.13	Q	|	|	|	|
0+10	0.0051	0.62	Q	|	|	|	|
0+15	0.0151	1.44	Q	|	|	|	|
0+20	0.0311	2.33	VQ	|	|	|	|



U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: AUH51EXIST15.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "A"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
5 YEAR - 1 HOUR
FN: AUH51EXIST

Drainage Area = 218.56(Ac.) = 0.342 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 218.56(Ac.) = 0.342 Sq. Mi.
Length along longest watercourse = 7012.00(Ft.)
Length along longest watercourse measured to centroid = 3373.00(Ft.)
Length along longest watercourse = 1.328 Mi.
Length along longest watercourse measured to centroid = 0.639 Mi.
Difference in elevation = 321.00(Ft.)
Slope along watercourse = 241.7114 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.278 Hr.
Lag time = 16.69 Min.
25% of lag time = 4.17 Min.
40% of lag time = 6.68 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	0.55	120.21

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	1.36	297.24

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 0.550(In)
Area Averaged 100-Year Rainfall = 1.360(In)

Point rain (area averaged) = 0.740(In)
Areal adjustment factor = 99.80 %
Adjusted average point rain = 0.738(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
218.560	60.00	0.000

Total Area Entered = 218.56(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
60.0	40.0	0.670	0.000	0.670	1.000	0.670
					Sum (F) =	0.670

Area averaged mean soil loss (F) (In/Hr) = 0.670
Minimum soil loss rate ((In/Hr)) = 0.335
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.4800

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	29.957	2.894	6.376
2	0.167	59.914	10.603	23.355
3	0.250	89.872	18.530	40.817
4	0.333	119.829	20.150	44.385
5	0.417	149.786	12.840	28.283
6	0.500	179.743	7.392	16.282
7	0.583	209.701	4.765	10.495
8	0.667	239.658	3.715	8.183
9	0.750	269.615	2.997	6.601
10	0.833	299.572	2.496	5.499
11	0.917	329.529	1.990	4.383
12	1.000	359.487	1.773	3.906
13	1.083	389.444	1.430	3.150
14	1.167	419.401	1.243	2.737
15	1.250	449.358	0.981	2.161
16	1.333	479.316	0.930	2.048
17	1.417	509.273	0.887	1.954
18	1.500	539.230	0.716	1.578
19	1.583	569.187	0.634	1.398
20	1.667	599.144	0.547	1.205
21	1.750	629.102	0.483	1.063
22	1.833	659.059	0.414	0.912
23	1.917	689.016	0.329	0.724
24	2.000	718.973	0.300	0.660
25	2.083	748.931	0.300	0.660
26	2.167	778.888	0.300	0.660
27	2.250	808.845	0.361	0.795
			Sum = 100.000	Sum= 220.268

The following loss rate calculations reflect use of the minimum calculated loss

rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	4.40	0.390	(0.670)	0.351	0.039
2	0.17	4.50	0.399	(0.670)	0.359	0.040
3	0.25	5.40	0.478	(0.670)	0.431	0.048
4	0.33	5.40	0.478	(0.670)	0.431	0.048
5	0.42	5.70	0.505	(0.670)	0.454	0.050
6	0.50	6.40	0.567	(0.670)	0.510	0.057
7	0.58	7.90	0.700	(0.670)	0.630	0.070
8	0.67	9.10	0.806	0.670	(0.726)	0.136
9	0.75	12.80	1.134	0.670	(1.021)	0.464
10	0.83	25.60	2.268	0.670	(2.041)	1.598
11	0.92	7.90	0.700	(0.670)	0.630	0.070
12	1.00	4.90	0.434	(0.670)	0.391	0.043
	(Loss Rate Not Used)					
Sum =		100.0			Sum =	2.7

Flood volume = Effective rainfall 0.22(In)
times area 218.6(Ac.)/[(In)/(Ft.)] = 4.0(Ac.Ft)
Total soil loss = 0.52(In)
Total soil loss = 9.403(Ac.Ft)
Total rainfall = 0.74(In)
Flood volume = 176114.1 Cubic Feet
Total soil loss = 409598.5 Cubic Feet

Peak flow rate of this hydrograph = 94.703(CFS)

++

1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	25.0	50.0	75.0	100.0
0+ 5	0.0017	0.25	Q				
0+10	0.0097	1.17	Q				
0+15	0.0292	2.83	VQ				
0+20	0.0622	4.78	VQ				
0+25	0.1053	6.27	VQ				
0+30	0.1562	7.38	VQ				
0+35	0.2138	8.37	VQ				
0+40	0.2822	9.93	VQ				
0+45	0.3843	14.82	V Q				
0+50	0.6151	33.52	V	Q			
0+55	1.0788	67.33	V		Q		
1+ 0	1.7311	94.70		V		Q	
1+ 5	2.3680	92.48			V	Q	
1+10	2.7878	60.95			Q V		
1+15	3.0457	37.46		Q		V	
1+20	3.2188	25.13		Q		V	
1+25	3.3526	19.42	Q			V	
1+30	3.4605	15.67	Q			V	
1+35	3.5498	12.97	Q			V	
1+40	3.6229	10.61	Q			V	
1+45	3.6865	9.23	Q			V	
1+50	3.7388	7.60	Q			V	
1+55	3.7837	6.52	Q			V	
2+ 0	3.8209	5.40	Q			V	
2+ 5	3.8555	5.02	Q			V	
2+10	3.8871	4.59	Q			V	

```
    2+15       3.9136      3.84  |Q        |         |         |       V |
    2+20       3.9368      3.37  |Q        |         |         |       V |
    2+25       3.9568      2.90  |Q        |         |         |        V|
    2+30       3.9742      2.52  |Q        |         |         |        V|
    2+35       3.9889      2.13  Q         |         |         |        V|
    2+40       4.0009      1.76  Q         |         |         |        V|
    2+45       4.0120      1.60  Q         |         |         |        V|
    2+50       4.0226      1.55  Q         |         |         |        V|
    2+55       4.0329      1.50  Q         |         |         |        V|
    3+ 0       4.0422      1.35  Q         |         |         |        V|
    3+ 5       4.0428      0.08  Q         |         |         |        V|
    3+10       4.0430      0.03  Q         |         |         |        V|
-------------------------------------------------------------------------
```

APPENDIX E.4: AREA “A” – EXISTING CONDITION HYDROGRAPH CALCULATIONS 2–YEAR

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: AUH224EXIST242.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "A"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
2 YEAR - 24 HOUR
FN: AUH224EXIST

Drainage Area = 218.56(Ac.) = 0.342 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 218.56(Ac.) = 0.342 Sq. Mi.
Length along longest watercourse = 7012.00(Ft.)
Length along longest watercourse measured to centroid = 3373.00(Ft.)
Length along longest watercourse = 1.328 Mi.
Length along longest watercourse measured to centroid = 0.639 Mi.
Difference in elevation = 321.00(Ft.)
Slope along watercourse = 241.7114 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.278 Hr.
Lag time = 16.69 Min.
25% of lag time = 4.17 Min.
40% of lag time = 6.68 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	2.50	546.40

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	8.00	1748.48

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 2.500(In)
Area Averaged 100-Year Rainfall = 8.000(In)

Point rain (area averaged) = 2.500(In)
Areal adjustment factor = 99.96 %
Adjusted average point rain = 2.499(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
218.560	60.00	0.000

Total Area Entered = 218.56(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
60.0	40.0	0.670	0.000	0.670	1.000	0.670
					Sum (F) =	0.670

Area averaged mean soil loss (F) (In/Hr) = 0.670
Minimum soil loss rate ((In/Hr)) = 0.335
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	29.957	2.894	6.376
2	0.167	59.914	10.603	23.355
3	0.250	89.872	18.530	40.817
4	0.333	119.829	20.150	44.385
5	0.417	149.786	12.840	28.283
6	0.500	179.743	7.392	16.282
7	0.583	209.701	4.765	10.495
8	0.667	239.658	3.715	8.183
9	0.750	269.615	2.997	6.601
10	0.833	299.572	2.496	5.499
11	0.917	329.529	1.990	4.383
12	1.000	359.487	1.773	3.906
13	1.083	389.444	1.430	3.150
14	1.167	419.401	1.243	2.737
15	1.250	449.358	0.981	2.161
16	1.333	479.316	0.930	2.048
17	1.417	509.273	0.887	1.954
18	1.500	539.230	0.716	1.578
19	1.583	569.187	0.634	1.398
20	1.667	599.144	0.547	1.205
21	1.750	629.102	0.483	1.063
22	1.833	659.059	0.414	0.912
23	1.917	689.016	0.329	0.724
24	2.000	718.973	0.300	0.660
25	2.083	748.931	0.300	0.660
26	2.167	778.888	0.300	0.660
27	2.250	808.845	0.361	0.795
			Sum = 100.000	Sum= 220.268

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1	0.08	0.07	0.020	(1.187)		0.018	0.002
2	0.17	0.07	0.020	(1.183)		0.018	0.002
3	0.25	0.07	0.020	(1.178)		0.018	0.002
4	0.33	0.10	0.030	(1.174)		0.027	0.003
5	0.42	0.10	0.030	(1.169)		0.027	0.003
6	0.50	0.10	0.030	(1.164)		0.027	0.003
7	0.58	0.10	0.030	(1.160)		0.027	0.003
8	0.67	0.10	0.030	(1.155)		0.027	0.003
9	0.75	0.10	0.030	(1.151)		0.027	0.003
10	0.83	0.13	0.040	(1.146)		0.036	0.004
11	0.92	0.13	0.040	(1.142)		0.036	0.004
12	1.00	0.13	0.040	(1.137)		0.036	0.004
13	1.08	0.10	0.030	(1.133)		0.027	0.003
14	1.17	0.10	0.030	(1.128)		0.027	0.003
15	1.25	0.10	0.030	(1.124)		0.027	0.003
16	1.33	0.10	0.030	(1.119)		0.027	0.003
17	1.42	0.10	0.030	(1.115)		0.027	0.003
18	1.50	0.10	0.030	(1.111)		0.027	0.003
19	1.58	0.10	0.030	(1.106)		0.027	0.003
20	1.67	0.10	0.030	(1.102)		0.027	0.003
21	1.75	0.10	0.030	(1.097)		0.027	0.003
22	1.83	0.13	0.040	(1.093)		0.036	0.004
23	1.92	0.13	0.040	(1.088)		0.036	0.004
24	2.00	0.13	0.040	(1.084)		0.036	0.004
25	2.08	0.13	0.040	(1.080)		0.036	0.004
26	2.17	0.13	0.040	(1.075)		0.036	0.004
27	2.25	0.13	0.040	(1.071)		0.036	0.004
28	2.33	0.13	0.040	(1.067)		0.036	0.004
29	2.42	0.13	0.040	(1.062)		0.036	0.004
30	2.50	0.13	0.040	(1.058)		0.036	0.004
31	2.58	0.17	0.050	(1.054)		0.045	0.005
32	2.67	0.17	0.050	(1.049)		0.045	0.005
33	2.75	0.17	0.050	(1.045)		0.045	0.005
34	2.83	0.17	0.050	(1.041)		0.045	0.005
35	2.92	0.17	0.050	(1.036)		0.045	0.005
36	3.00	0.17	0.050	(1.032)		0.045	0.005
37	3.08	0.17	0.050	(1.028)		0.045	0.005
38	3.17	0.17	0.050	(1.023)		0.045	0.005
39	3.25	0.17	0.050	(1.019)		0.045	0.005
40	3.33	0.17	0.050	(1.015)		0.045	0.005
41	3.42	0.17	0.050	(1.011)		0.045	0.005
42	3.50	0.17	0.050	(1.006)		0.045	0.005
43	3.58	0.17	0.050	(1.002)		0.045	0.005
44	3.67	0.17	0.050	(0.998)		0.045	0.005
45	3.75	0.17	0.050	(0.994)		0.045	0.005
46	3.83	0.20	0.060	(0.990)		0.054	0.006
47	3.92	0.20	0.060	(0.985)		0.054	0.006
48	4.00	0.20	0.060	(0.981)		0.054	0.006
49	4.08	0.20	0.060	(0.977)		0.054	0.006
50	4.17	0.20	0.060	(0.973)		0.054	0.006
51	4.25	0.20	0.060	(0.969)		0.054	0.006
52	4.33	0.23	0.070	(0.965)		0.063	0.007
53	4.42	0.23	0.070	(0.961)		0.063	0.007
54	4.50	0.23	0.070	(0.956)		0.063	0.007
55	4.58	0.23	0.070	(0.952)		0.063	0.007
56	4.67	0.23	0.070	(0.948)		0.063	0.007
57	4.75	0.23	0.070	(0.944)		0.063	0.007
58	4.83	0.27	0.080	(0.940)		0.072	0.008
59	4.92	0.27	0.080	(0.936)		0.072	0.008
60	5.00	0.27	0.080	(0.932)		0.072	0.008
61	5.08	0.20	0.060	(0.928)		0.054	0.006

62	5.17	0.20	0.060	(0.924)	0.054	0.006
63	5.25	0.20	0.060	(0.920)	0.054	0.006
64	5.33	0.23	0.070	(0.916)	0.063	0.007
65	5.42	0.23	0.070	(0.912)	0.063	0.007
66	5.50	0.23	0.070	(0.908)	0.063	0.007
67	5.58	0.27	0.080	(0.904)	0.072	0.008
68	5.67	0.27	0.080	(0.900)	0.072	0.008
69	5.75	0.27	0.080	(0.896)	0.072	0.008
70	5.83	0.27	0.080	(0.892)	0.072	0.008
71	5.92	0.27	0.080	(0.888)	0.072	0.008
72	6.00	0.27	0.080	(0.884)	0.072	0.008
73	6.08	0.30	0.090	(0.880)	0.081	0.009
74	6.17	0.30	0.090	(0.876)	0.081	0.009
75	6.25	0.30	0.090	(0.872)	0.081	0.009
76	6.33	0.30	0.090	(0.868)	0.081	0.009
77	6.42	0.30	0.090	(0.865)	0.081	0.009
78	6.50	0.30	0.090	(0.861)	0.081	0.009
79	6.58	0.33	0.100	(0.857)	0.090	0.010
80	6.67	0.33	0.100	(0.853)	0.090	0.010
81	6.75	0.33	0.100	(0.849)	0.090	0.010
82	6.83	0.33	0.100	(0.845)	0.090	0.010
83	6.92	0.33	0.100	(0.841)	0.090	0.010
84	7.00	0.33	0.100	(0.838)	0.090	0.010
85	7.08	0.33	0.100	(0.834)	0.090	0.010
86	7.17	0.33	0.100	(0.830)	0.090	0.010
87	7.25	0.33	0.100	(0.826)	0.090	0.010
88	7.33	0.37	0.110	(0.822)	0.099	0.011
89	7.42	0.37	0.110	(0.819)	0.099	0.011
90	7.50	0.37	0.110	(0.815)	0.099	0.011
91	7.58	0.40	0.120	(0.811)	0.108	0.012
92	7.67	0.40	0.120	(0.808)	0.108	0.012
93	7.75	0.40	0.120	(0.804)	0.108	0.012
94	7.83	0.43	0.130	(0.800)	0.117	0.013
95	7.92	0.43	0.130	(0.796)	0.117	0.013
96	8.00	0.43	0.130	(0.793)	0.117	0.013
97	8.08	0.50	0.150	(0.789)	0.135	0.015
98	8.17	0.50	0.150	(0.785)	0.135	0.015
99	8.25	0.50	0.150	(0.782)	0.135	0.015
100	8.33	0.50	0.150	(0.778)	0.135	0.015
101	8.42	0.50	0.150	(0.774)	0.135	0.015
102	8.50	0.50	0.150	(0.771)	0.135	0.015
103	8.58	0.53	0.160	(0.767)	0.144	0.016
104	8.67	0.53	0.160	(0.764)	0.144	0.016
105	8.75	0.53	0.160	(0.760)	0.144	0.016
106	8.83	0.57	0.170	(0.756)	0.153	0.017
107	8.92	0.57	0.170	(0.753)	0.153	0.017
108	9.00	0.57	0.170	(0.749)	0.153	0.017
109	9.08	0.63	0.190	(0.746)	0.171	0.019
110	9.17	0.63	0.190	(0.742)	0.171	0.019
111	9.25	0.63	0.190	(0.739)	0.171	0.019
112	9.33	0.67	0.200	(0.735)	0.180	0.020
113	9.42	0.67	0.200	(0.732)	0.180	0.020
114	9.50	0.67	0.200	(0.728)	0.180	0.020
115	9.58	0.70	0.210	(0.725)	0.189	0.021
116	9.67	0.70	0.210	(0.721)	0.189	0.021
117	9.75	0.70	0.210	(0.718)	0.189	0.021
118	9.83	0.73	0.220	(0.714)	0.198	0.022
119	9.92	0.73	0.220	(0.711)	0.198	0.022
120	10.00	0.73	0.220	(0.707)	0.198	0.022
121	10.08	0.50	0.150	(0.704)	0.135	0.015
122	10.17	0.50	0.150	(0.700)	0.135	0.015
123	10.25	0.50	0.150	(0.697)	0.135	0.015
124	10.33	0.50	0.150	(0.694)	0.135	0.015

125	10.42	0.50	0.150	(0.690)	0.135	0.015
126	10.50	0.50	0.150	(0.687)	0.135	0.015
127	10.58	0.67	0.200	(0.684)	0.180	0.020
128	10.67	0.67	0.200	(0.680)	0.180	0.020
129	10.75	0.67	0.200	(0.677)	0.180	0.020
130	10.83	0.67	0.200	(0.674)	0.180	0.020
131	10.92	0.67	0.200	(0.670)	0.180	0.020
132	11.00	0.67	0.200	(0.667)	0.180	0.020
133	11.08	0.63	0.190	(0.664)	0.171	0.019
134	11.17	0.63	0.190	(0.660)	0.171	0.019
135	11.25	0.63	0.190	(0.657)	0.171	0.019
136	11.33	0.63	0.190	(0.654)	0.171	0.019
137	11.42	0.63	0.190	(0.651)	0.171	0.019
138	11.50	0.63	0.190	(0.647)	0.171	0.019
139	11.58	0.57	0.170	(0.644)	0.153	0.017
140	11.67	0.57	0.170	(0.641)	0.153	0.017
141	11.75	0.57	0.170	(0.638)	0.153	0.017
142	11.83	0.60	0.180	(0.635)	0.162	0.018
143	11.92	0.60	0.180	(0.632)	0.162	0.018
144	12.00	0.60	0.180	(0.628)	0.162	0.018
145	12.08	0.83	0.250	(0.625)	0.225	0.025
146	12.17	0.83	0.250	(0.622)	0.225	0.025
147	12.25	0.83	0.250	(0.619)	0.225	0.025
148	12.33	0.87	0.260	(0.616)	0.234	0.026
149	12.42	0.87	0.260	(0.613)	0.234	0.026
150	12.50	0.87	0.260	(0.610)	0.234	0.026
151	12.58	0.93	0.280	(0.607)	0.252	0.028
152	12.67	0.93	0.280	(0.604)	0.252	0.028
153	12.75	0.93	0.280	(0.601)	0.252	0.028
154	12.83	0.97	0.290	(0.598)	0.261	0.029
155	12.92	0.97	0.290	(0.594)	0.261	0.029
156	13.00	0.97	0.290	(0.591)	0.261	0.029
157	13.08	1.13	0.340	(0.588)	0.306	0.034
158	13.17	1.13	0.340	(0.585)	0.306	0.034
159	13.25	1.13	0.340	(0.583)	0.306	0.034
160	13.33	1.13	0.340	(0.580)	0.306	0.034
161	13.42	1.13	0.340	(0.577)	0.306	0.034
162	13.50	1.13	0.340	(0.574)	0.306	0.034
163	13.58	0.77	0.230	(0.571)	0.207	0.023
164	13.67	0.77	0.230	(0.568)	0.207	0.023
165	13.75	0.77	0.230	(0.565)	0.207	0.023
166	13.83	0.77	0.230	(0.562)	0.207	0.023
167	13.92	0.77	0.230	(0.559)	0.207	0.023
168	14.00	0.77	0.230	(0.556)	0.207	0.023
169	14.08	0.90	0.270	(0.554)	0.243	0.027
170	14.17	0.90	0.270	(0.551)	0.243	0.027
171	14.25	0.90	0.270	(0.548)	0.243	0.027
172	14.33	0.87	0.260	(0.545)	0.234	0.026
173	14.42	0.87	0.260	(0.542)	0.234	0.026
174	14.50	0.87	0.260	(0.540)	0.234	0.026
175	14.58	0.87	0.260	(0.537)	0.234	0.026
176	14.67	0.87	0.260	(0.534)	0.234	0.026
177	14.75	0.87	0.260	(0.531)	0.234	0.026
178	14.83	0.83	0.250	(0.529)	0.225	0.025
179	14.92	0.83	0.250	(0.526)	0.225	0.025
180	15.00	0.83	0.250	(0.523)	0.225	0.025
181	15.08	0.80	0.240	(0.520)	0.216	0.024
182	15.17	0.80	0.240	(0.518)	0.216	0.024
183	15.25	0.80	0.240	(0.515)	0.216	0.024
184	15.33	0.77	0.230	(0.512)	0.207	0.023
185	15.42	0.77	0.230	(0.510)	0.207	0.023
186	15.50	0.77	0.230	(0.507)	0.207	0.023
187	15.58	0.63	0.190	(0.505)	0.171	0.019

188	15.67	0.63	0.190	(0.502)	0.171	0.019
189	15.75	0.63	0.190	(0.499)	0.171	0.019
190	15.83	0.63	0.190	(0.497)	0.171	0.019
191	15.92	0.63	0.190	(0.494)	0.171	0.019
192	16.00	0.63	0.190	(0.492)	0.171	0.019
193	16.08	0.13	0.040	(0.489)	0.036	0.004
194	16.17	0.13	0.040	(0.487)	0.036	0.004
195	16.25	0.13	0.040	(0.484)	0.036	0.004
196	16.33	0.13	0.040	(0.482)	0.036	0.004
197	16.42	0.13	0.040	(0.479)	0.036	0.004
198	16.50	0.13	0.040	(0.477)	0.036	0.004
199	16.58	0.10	0.030	(0.475)	0.027	0.003
200	16.67	0.10	0.030	(0.472)	0.027	0.003
201	16.75	0.10	0.030	(0.470)	0.027	0.003
202	16.83	0.10	0.030	(0.467)	0.027	0.003
203	16.92	0.10	0.030	(0.465)	0.027	0.003
204	17.00	0.10	0.030	(0.463)	0.027	0.003
205	17.08	0.17	0.050	(0.460)	0.045	0.005
206	17.17	0.17	0.050	(0.458)	0.045	0.005
207	17.25	0.17	0.050	(0.456)	0.045	0.005
208	17.33	0.17	0.050	(0.453)	0.045	0.005
209	17.42	0.17	0.050	(0.451)	0.045	0.005
210	17.50	0.17	0.050	(0.449)	0.045	0.005
211	17.58	0.17	0.050	(0.447)	0.045	0.005
212	17.67	0.17	0.050	(0.444)	0.045	0.005
213	17.75	0.17	0.050	(0.442)	0.045	0.005
214	17.83	0.13	0.040	(0.440)	0.036	0.004
215	17.92	0.13	0.040	(0.438)	0.036	0.004
216	18.00	0.13	0.040	(0.436)	0.036	0.004
217	18.08	0.13	0.040	(0.434)	0.036	0.004
218	18.17	0.13	0.040	(0.431)	0.036	0.004
219	18.25	0.13	0.040	(0.429)	0.036	0.004
220	18.33	0.13	0.040	(0.427)	0.036	0.004
221	18.42	0.13	0.040	(0.425)	0.036	0.004
222	18.50	0.13	0.040	(0.423)	0.036	0.004
223	18.58	0.10	0.030	(0.421)	0.027	0.003
224	18.67	0.10	0.030	(0.419)	0.027	0.003
225	18.75	0.10	0.030	(0.417)	0.027	0.003
226	18.83	0.07	0.020	(0.415)	0.018	0.002
227	18.92	0.07	0.020	(0.413)	0.018	0.002
228	19.00	0.07	0.020	(0.411)	0.018	0.002
229	19.08	0.10	0.030	(0.409)	0.027	0.003
230	19.17	0.10	0.030	(0.407)	0.027	0.003
231	19.25	0.10	0.030	(0.405)	0.027	0.003
232	19.33	0.13	0.040	(0.403)	0.036	0.004
233	19.42	0.13	0.040	(0.401)	0.036	0.004
234	19.50	0.13	0.040	(0.400)	0.036	0.004
235	19.58	0.10	0.030	(0.398)	0.027	0.003
236	19.67	0.10	0.030	(0.396)	0.027	0.003
237	19.75	0.10	0.030	(0.394)	0.027	0.003
238	19.83	0.07	0.020	(0.392)	0.018	0.002
239	19.92	0.07	0.020	(0.391)	0.018	0.002
240	20.00	0.07	0.020	(0.389)	0.018	0.002
241	20.08	0.10	0.030	(0.387)	0.027	0.003
242	20.17	0.10	0.030	(0.386)	0.027	0.003
243	20.25	0.10	0.030	(0.384)	0.027	0.003
244	20.33	0.10	0.030	(0.382)	0.027	0.003
245	20.42	0.10	0.030	(0.381)	0.027	0.003
246	20.50	0.10	0.030	(0.379)	0.027	0.003
247	20.58	0.10	0.030	(0.377)	0.027	0.003
248	20.67	0.10	0.030	(0.376)	0.027	0.003
249	20.75	0.10	0.030	(0.374)	0.027	0.003
250	20.83	0.07	0.020	(0.373)	0.018	0.002

```
251  20.92     0.07      0.020       (  0.371)       0.018        0.002
252  21.00     0.07      0.020       (  0.370)       0.018        0.002
253  21.08     0.10      0.030       (  0.368)       0.027        0.003
254  21.17     0.10      0.030       (  0.367)       0.027        0.003
255  21.25     0.10      0.030       (  0.365)       0.027        0.003
256  21.33     0.07      0.020       (  0.364)       0.018        0.002
257  21.42     0.07      0.020       (  0.363)       0.018        0.002
258  21.50     0.07      0.020       (  0.361)       0.018        0.002
259  21.58     0.10      0.030       (  0.360)       0.027        0.003
260  21.67     0.10      0.030       (  0.359)       0.027        0.003
261  21.75     0.10      0.030       (  0.357)       0.027        0.003
262  21.83     0.07      0.020       (  0.356)       0.018        0.002
263  21.92     0.07      0.020       (  0.355)       0.018        0.002
264  22.00     0.07      0.020       (  0.354)       0.018        0.002
265  22.08     0.10      0.030       (  0.352)       0.027        0.003
266  22.17     0.10      0.030       (  0.351)       0.027        0.003
267  22.25     0.10      0.030       (  0.350)       0.027        0.003
268  22.33     0.07      0.020       (  0.349)       0.018        0.002
269  22.42     0.07      0.020       (  0.348)       0.018        0.002
270  22.50     0.07      0.020       (  0.347)       0.018        0.002
271  22.58     0.07      0.020       (  0.346)       0.018        0.002
272  22.67     0.07      0.020       (  0.345)       0.018        0.002
273  22.75     0.07      0.020       (  0.344)       0.018        0.002
274  22.83     0.07      0.020       (  0.343)       0.018        0.002
275  22.92     0.07      0.020       (  0.342)       0.018        0.002
276  23.00     0.07      0.020       (  0.342)       0.018        0.002
277  23.08     0.07      0.020       (  0.341)       0.018        0.002
278  23.17     0.07      0.020       (  0.340)       0.018        0.002
279  23.25     0.07      0.020       (  0.339)       0.018        0.002
280  23.33     0.07      0.020       (  0.339)       0.018        0.002
281  23.42     0.07      0.020       (  0.338)       0.018        0.002
282  23.50     0.07      0.020       (  0.337)       0.018        0.002
283  23.58     0.07      0.020       (  0.337)       0.018        0.002
284  23.67     0.07      0.020       (  0.336)       0.018        0.002
285  23.75     0.07      0.020       (  0.336)       0.018        0.002
286  23.83     0.07      0.020       (  0.335)       0.018        0.002
287  23.92     0.07      0.020       (  0.335)       0.018        0.002
288  24.00     0.07      0.020       (  0.335)       0.018        0.002
            (Loss Rate Not Used)
    Sum =     100.0                                  Sum =     3.0
      Flood volume = Effective rainfall      0.25(In)
       times area     218.6(Ac.)/[(In)/(Ft.)] =       4.6(Ac.Ft)
      Total soil loss =      2.25(In)
      Total soil loss =    40.963(Ac.Ft)
      Total rainfall =      2.50(In)
      Flood volume =      198258.5 Cubic Feet
      Total soil loss =     1784326.8 Cubic Feet
      ------------------------------------------------------------------------
       Peak flow rate of this hydrograph =      7.042(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0001      0.01  Q         |         |         |         |
   0+10       0.0005      0.06  Q         |         |         |         |
   0+15       0.0015      0.14  Q         |         |         |         |
   0+20       0.0031      0.24  Q         |         |         |         |
```

0+25	0.0053	0.32	VQ	|	|	|	|
0+30	0.0080	0.39	VQ	|	|	|	|
0+35	0.0111	0.45	VQ	|	|	|	|
0+40	0.0145	0.50	VQ	|	|	|	|
0+45	0.0182	0.53	V Q	|	|	|	|
0+50	0.0220	0.56	V Q	|	|	|	|
0+55	0.0261	0.60	V Q	|	|	|	|
1+ 0	0.0306	0.65	V Q	|	|	|	|
1+ 5	0.0355	0.70	V Q	|	|	|	|
1+10	0.0404	0.72	V Q	|	|	|	|
1+15	0.0452	0.70	V Q	|	|	|	|
1+20	0.0499	0.67	V Q	|	|	|	|
1+25	0.0544	0.66	V Q	|	|	|	|
1+30	0.0589	0.66	V Q	|	|	|	|
1+35	0.0635	0.66	V Q	|	|	|	|
1+40	0.0680	0.66	V Q	|	|	|	|
1+45	0.0725	0.66	V Q	|	|	|	|
1+50	0.0771	0.67	V Q	|	|	|	|
1+55	0.0818	0.69	V Q	|	|	|	|
2+ 0	0.0869	0.73	V Q	|	|	|	|
2+ 5	0.0922	0.78	V Q	|	|	|	|
2+10	0.0978	0.81	V Q	|	|	|	|
2+15	0.1034	0.82	V Q	|	|	|	|
2+20	0.1092	0.83	V Q	|	|	|	|
2+25	0.1150	0.84	|V Q	|	|	|	|
2+30	0.1208	0.85	|V Q	|	|	|	|
2+35	0.1268	0.86	|V Q	|	|	|	|
2+40	0.1329	0.89	|V Q	|	|	|	|
2+45	0.1393	0.93	|V Q	|	|	|	|
2+50	0.1460	0.98	|V Q	|	|	|	|
2+55	0.1530	1.01	|V Q	|	|	|	|
3+ 0	0.1601	1.03	|V Q	|	|	|	|
3+ 5	0.1673	1.04	|V Q	|	|	|	|
3+10	0.1745	1.05	|V Q	|	|	|	|
3+15	0.1818	1.06	|V Q	|	|	|	|
3+20	0.1891	1.06	|V Q	|	|	|	|
3+25	0.1965	1.07	|V Q	|	|	|	|
3+30	0.2039	1.08	|V Q	|	|	|	|
3+35	0.2113	1.08	|V Q	|	|	|	|
3+40	0.2188	1.08	|V Q	|	|	|	|
3+45	0.2263	1.09	|V Q	|	|	|	|
3+50	0.2338	1.09	| V Q	|	|	|	|
3+55	0.2415	1.12	| V Q	|	|	|	|
4+ 0	0.2495	1.16	| V Q	|	|	|	|
4+ 5	0.2579	1.21	| V Q	|	|	|	|
4+10	0.2664	1.24	| V Q	|	|	|	|
4+15	0.2751	1.26	| V Q	|	|	|	|
4+20	0.2838	1.27	| V Q	|	|	|	|
4+25	0.2928	1.31	| V Q	|	|	|	|
4+30	0.3022	1.35	| V Q	|	|	|	|
4+35	0.3118	1.41	| V Q	|	|	|	|
4+40	0.3217	1.44	| V Q	|	|	|	|
4+45	0.3318	1.46	| V Q	|	|	|	|
4+50	0.3420	1.48	| V Q	|	|	|	|
4+55	0.3524	1.51	| V Q	|	|	|	|
5+ 0	0.3632	1.56	| V Q	|	|	|	|
5+ 5	0.3742	1.60	| V Q	|	|	|	|
5+10	0.3852	1.59	| V Q	|	|	|	|
5+15	0.3957	1.53	| V Q	|	|	|	|
5+20	0.4058	1.46	| V Q	|	|	|	|
5+25	0.4157	1.44	| V Q	|	|	|	|
5+30	0.4258	1.46	| V Q	|	|	|	|
5+35	0.4361	1.50	| V Q	|	|	|	|

5+40	0.4467	1.54	V Q			
5+45	0.4577	1.59	V Q			
5+50	0.4690	1.64	V Q			
5+55	0.4805	1.67	V Q			
6+ 0	0.4921	1.69	V Q			
6+ 5	0.5039	1.71	V Q			
6+10	0.5159	1.74	V Q			
6+15	0.5283	1.79	V Q			
6+20	0.5410	1.84	V Q			
6+25	0.5539	1.88	V Q			
6+30	0.5670	1.90	V Q			
6+35	0.5802	1.92	V Q			
6+40	0.5936	1.95	V Q			
6+45	0.6074	2.00	V Q			
6+50	0.6216	2.05	V Q			
6+55	0.6360	2.09	V Q			
7+ 0	0.6505	2.11	V Q			
7+ 5	0.6652	2.13	V Q			
7+10	0.6799	2.14	V Q			
7+15	0.6947	2.15	V Q			
7+20	0.7096	2.16	V Q			
7+25	0.7247	2.19	V Q			
7+30	0.7401	2.24	V Q			
7+35	0.7559	2.30	V Q			
7+40	0.7721	2.35	V Q			
7+45	0.7888	2.41	V Q			
7+50	0.8058	2.48	V Q			
7+55	0.8233	2.54	V Q			
8+ 0	0.8413	2.61	V Q			
8+ 5	0.8598	2.68	V Q			
8+10	0.8789	2.77	V Q			
8+15	0.8987	2.88	V Q			
8+20	0.9193	2.99	V Q			
8+25	0.9404	3.06	V Q			
8+30	0.9618	3.11	V Q			
8+35	0.9835	3.15	V Q			
8+40	1.0056	3.20	V Q			
8+45	1.0280	3.26	V Q			
8+50	1.0509	3.33	V Q			
8+55	1.0743	3.40	V Q			
9+ 0	1.0982	3.46	V Q			
9+ 5	1.1226	3.54	V Q			
9+10	1.1476	3.64	V Q			
9+15	1.1734	3.75	V Q			
9+20	1.2001	3.87	V Q			
9+25	1.2274	3.97	V Q			
9+30	1.2553	4.05	V Q			
9+35	1.2838	4.14	V Q			
9+40	1.3128	4.22	V Q			
9+45	1.3424	4.30	V Q			
9+50	1.3726	4.38	V Q			
9+55	1.4033	4.45	V Q			
10+ 0	1.4345	4.53	V Q			
10+ 5	1.4659	4.56	V Q			
10+10	1.4965	4.45	V Q			
10+15	1.5254	4.19	V Q			
10+20	1.5523	3.91	V Q			
10+25	1.5780	3.73	VQ			
10+30	1.6030	3.64	Q			
10+35	1.6279	3.61	Q			
10+40	1.6533	3.68	Q			
10+45	1.6798	3.85	VQ			
10+50	1.7076	4.04	VQ			

10+55	1.7363	4.16	|	| VQ |	|	|
11+ 0	1.7654	4.22	|	| VQ |	|	|
11+ 5	1.7947	4.25	|	| V Q |	|	|
11+10	1.8240	4.26	|	| VQ |	|	|
11+15	1.8532	4.24	|	| Q |	|	|
11+20	1.8822	4.21	|	| Q |	|	|
11+25	1.9111	4.19	|	| Q |	|	|
11+30	1.9399	4.19	|	| QV |	|	|
11+35	1.9686	4.17	|	| QV |	|	|
11+40	1.9970	4.12	|	| QV |	|	|
11+45	2.0249	4.04	|	| QV |	|	|
11+50	2.0521	3.96	|	| Q V |	|	|
11+55	2.0791	3.92	|	| Q V |	|	|
12+ 0	2.1062	3.93	|	| Q V |	|	|
12+ 5	2.1338	4.00	|	| Q V |	|	|
12+10	2.1625	4.17	|	| Q V|	|	|
12+15	2.1933	4.46	|	| Q V|	|	|
12+20	2.2262	4.78	|	| Q|	|	|
12+25	2.2606	5.00	|	| VQ	|	|
12+30	2.2962	5.16	|	| Q	|	|
12+35	2.3326	5.29	|	| VQ	|	|
12+40	2.3699	5.42	|	| VQ	|	|
12+45	2.4083	5.57	|	| |VQ	|	|
12+50	2.4476	5.71	|	| |VQ	|	|
12+55	2.4878	5.83	|	| |V Q	|	|
13+ 0	2.5286	5.93	|	| | VQ	|	|
13+ 5	2.5703	6.06	|	| | V Q	|	|
13+10	2.6133	6.24	|	| | V Q	|	|
13+15	2.6580	6.49	|	| | V Q	|	|
13+20	2.7046	6.75	|	| | V Q	|	|
13+25	2.7523	6.93	|	| | V Q	|	|
13+30	2.8007	7.04	|	| | V Q	|	|
13+35	2.8492	7.04	|	| | V Q	|	|
13+40	2.8964	6.85	|	| | V Q	|	|
13+45	2.9408	6.45	|	| | Q	|	|
13+50	2.9821	6.00	|	| | Q V	|	|
13+55	3.0215	5.73	|	| | Q V	|	|
14+ 0	3.0599	5.58	|	| | Q V	|	|
14+ 5	3.0979	5.51	|	| | Q V	|	|
14+10	3.1361	5.54	|	| | Q V	|	|
14+15	3.1750	5.65	|	| | Q V	|	|
14+20	3.2148	5.78	|	| | Q V	|	|
14+25	3.2550	5.83	|	| | Q V	|	|
14+30	3.2951	5.82	|	| | Q V	|	|
14+35	3.3350	5.80	|	| | Q V|	|	|
14+40	3.3748	5.78	|	| | Q V|	|	|
14+45	3.4145	5.77	|	| | Q V	|	|
14+50	3.4542	5.76	|	| | Q V	|	|
14+55	3.4937	5.73	|	| | Q V	|	|
15+ 0	3.5328	5.68	|	| | Q |V	|	|
15+ 5	3.5716	5.63	|	| | Q |V	|	|
15+10	3.6099	5.57	|	| | Q |V	|	|
15+15	3.6479	5.51	|	| | Q | V	|	|
15+20	3.6854	5.45	|	| |Q | V	|	|
15+25	3.7225	5.38	|	| |Q | V	|	|
15+30	3.7591	5.32	|	| |Q | V	|	|
15+35	3.7951	5.23	|	| Q | V	|	|
15+40	3.8302	5.09	|	| Q | V	|	|
15+45	3.8639	4.89	|	| Q| | V	|	|
15+50	3.8962	4.70	|	| Q | | V	|	|
15+55	3.9277	4.57	|	| Q | | V	|	|
16+ 0	3.9587	4.50	|	| Q | | V	|	|
16+ 5	3.9886	4.35	|	| Q | | V	|	|

| | | |

```
   21+25       4.4293      0.59  | Q       |         |         |       V |
   21+30       4.4332      0.56  | Q       |         |         |       V |
   21+35       4.4368      0.53  | Q       |         |         |       V |
   21+40       4.4405      0.53  | Q       |         |         |        V|
   21+45       4.4443      0.56  | Q       |         |         |        V|
   21+50       4.4483      0.59  | Q       |         |         |        V|
   21+55       4.4524      0.58  | Q       |         |         |        V|
   22+ 0       4.4562      0.55  | Q       |         |         |        V|
   22+ 5       4.4598      0.52  | Q       |         |         |        V|
   22+10       4.4634      0.52  | Q       |         |         |        V|
   22+15       4.4672      0.55  | Q       |         |         |        V|
   22+20       4.4712      0.58  | Q       |         |         |        V|
   22+25       4.4752      0.58  | Q       |         |         |        V|
   22+30       4.4790      0.55  | Q       |         |         |        V|
   22+35       4.4826      0.52  | Q       |         |         |        V|
   22+40       4.4860      0.49  |Q        |         |         |        V|
   22+45       4.4893      0.48  |Q        |         |         |        V|
   22+50       4.4925      0.47  |Q        |         |         |        V|
   22+55       4.4958      0.47  |Q        |         |         |        V|
   23+ 0       4.4989      0.46  |Q        |         |         |        V|
   23+ 5       4.5021      0.46  |Q        |         |         |        V|
   23+10       4.5052      0.46  |Q        |         |         |        V|
   23+15       4.5084      0.45  |Q        |         |         |        V|
   23+20       4.5115      0.45  |Q        |         |         |        V|
   23+25       4.5146      0.45  |Q        |         |         |        V|
   23+30       4.5177      0.45  |Q        |         |         |        V|
   23+35       4.5208      0.45  |Q        |         |         |        V|
   23+40       4.5238      0.45  |Q        |         |         |        V|
   23+45       4.5269      0.45  |Q        |         |         |        V|
   23+50       4.5300      0.45  |Q        |         |         |        V|
   23+55       4.5330      0.44  |Q        |         |         |        V|
   24+ 0       4.5361      0.44  |Q        |         |         |        V|
   24+ 5       4.5390      0.43  |Q        |         |         |        V|
   24+10       4.5417      0.38  |Q        |         |         |        V|
   24+15       4.5438      0.30  |Q        |         |         |        V|
   24+20       4.5452      0.21  Q         |         |         |        V|
   24+25       4.5463      0.15  Q         |         |         |        V|
   24+30       4.5471      0.12  Q         |         |         |        V|
   24+35       4.5478      0.10  Q         |         |         |        V|
   24+40       4.5484      0.08  Q         |         |         |        V|
   24+45       4.5489      0.07  Q         |         |         |        V|
   24+50       4.5493      0.06  Q         |         |         |        V|
   24+55       4.5497      0.05  Q         |         |         |        V|
   25+ 0       4.5499      0.04  Q         |         |         |        V|
   25+ 5       4.5502      0.04  Q         |         |         |        V|
   25+10       4.5504      0.03  Q         |         |         |        V|
   25+15       4.5506      0.03  Q         |         |         |        V|
   25+20       4.5508      0.02  Q         |         |         |        V|
   25+25       4.5509      0.02  Q         |         |         |        V|
   25+30       4.5510      0.02  Q         |         |         |        V|
   25+35       4.5511      0.01  Q         |         |         |        V|
   25+40       4.5512      0.01  Q         |         |         |        V|
   25+45       4.5512      0.01  Q         |         |         |        V|
   25+50       4.5513      0.01  Q         |         |         |        V|
   25+55       4.5513      0.01  Q         |         |         |        V|
   26+ 0       4.5514      0.00  Q         |         |         |        V|
   26+ 5       4.5514      0.00  Q         |         |         |        V|
   26+10       4.5514      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: AUH26EXIST62.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "A"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
2 YEAR - 6 HOUR
FN: AUH26EXIST

Drainage Area = 218.56(Ac.) = 0.342 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 218.56(Ac.) = 0.342 Sq. Mi.
Length along longest watercourse = 7012.00(Ft.)
Length along longest watercourse measured to centroid = 3373.00(Ft.)
Length along longest watercourse = 1.328 Mi.
Length along longest watercourse measured to centroid = 0.639 Mi.
Difference in elevation = 321.00(Ft.)
Slope along watercourse = 241.7114 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.278 Hr.
Lag time = 16.69 Min.
25% of lag time = 4.17 Min.
40% of lag time = 6.68 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	1.40	305.98

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	3.00	655.68

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.400(In)
Area Averaged 100-Year Rainfall = 3.000(In)

Point rain (area averaged) = 1.400(In)
Areal adjustment factor = 99.92 %
Adjusted average point rain = 1.399(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
218.560	60.00	0.000

Total Area Entered = 218.56(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
60.0	40.0	0.670	0.000	0.670	1.000	0.670
					Sum (F) =	0.670

Area averaged mean soil loss (F) (In/Hr) = 0.670
Minimum soil loss rate ((In/Hr)) = 0.335
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	29.957	2.894	6.376
2	0.167	59.914	10.603	23.355
3	0.250	89.872	18.530	40.817
4	0.333	119.829	20.150	44.385
5	0.417	149.786	12.840	28.283
6	0.500	179.743	7.392	16.282
7	0.583	209.701	4.765	10.495
8	0.667	239.658	3.715	8.183
9	0.750	269.615	2.997	6.601
10	0.833	299.572	2.496	5.499
11	0.917	329.529	1.990	4.383
12	1.000	359.487	1.773	3.906
13	1.083	389.444	1.430	3.150
14	1.167	419.401	1.243	2.737
15	1.250	449.358	0.981	2.161
16	1.333	479.316	0.930	2.048
17	1.417	509.273	0.887	1.954
18	1.500	539.230	0.716	1.578
19	1.583	569.187	0.634	1.398
20	1.667	599.144	0.547	1.205
21	1.750	629.102	0.483	1.063
22	1.833	659.059	0.414	0.912
23	1.917	689.016	0.329	0.724
24	2.000	718.973	0.300	0.660
25	2.083	748.931	0.300	0.660
26	2.167	778.888	0.300	0.660
27	2.250	808.845	0.361	0.795
			Sum = 100.000	Sum= 220.268

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1	0.08	0.50	0.084	(0.670)		0.076	0.008
2	0.17	0.60	0.101	(0.670)		0.091	0.010
3	0.25	0.60	0.101	(0.670)		0.091	0.010
4	0.33	0.60	0.101	(0.670)		0.091	0.010
5	0.42	0.60	0.101	(0.670)		0.091	0.010
6	0.50	0.70	0.118	(0.670)		0.106	0.012
7	0.58	0.70	0.118	(0.670)		0.106	0.012
8	0.67	0.70	0.118	(0.670)		0.106	0.012
9	0.75	0.70	0.118	(0.670)		0.106	0.012
10	0.83	0.70	0.118	(0.670)		0.106	0.012
11	0.92	0.70	0.118	(0.670)		0.106	0.012
12	1.00	0.80	0.134	(0.670)		0.121	0.013
13	1.08	0.80	0.134	(0.670)		0.121	0.013
14	1.17	0.80	0.134	(0.670)		0.121	0.013
15	1.25	0.80	0.134	(0.670)		0.121	0.013
16	1.33	0.80	0.134	(0.670)		0.121	0.013
17	1.42	0.80	0.134	(0.670)		0.121	0.013
18	1.50	0.80	0.134	(0.670)		0.121	0.013
19	1.58	0.80	0.134	(0.670)		0.121	0.013
20	1.67	0.80	0.134	(0.670)		0.121	0.013
21	1.75	0.80	0.134	(0.670)		0.121	0.013
22	1.83	0.80	0.134	(0.670)		0.121	0.013
23	1.92	0.80	0.134	(0.670)		0.121	0.013
24	2.00	0.90	0.151	(0.670)		0.136	0.015
25	2.08	0.80	0.134	(0.670)		0.121	0.013
26	2.17	0.90	0.151	(0.670)		0.136	0.015
27	2.25	0.90	0.151	(0.670)		0.136	0.015
28	2.33	0.90	0.151	(0.670)		0.136	0.015
29	2.42	0.90	0.151	(0.670)		0.136	0.015
30	2.50	0.90	0.151	(0.670)		0.136	0.015
31	2.58	0.90	0.151	(0.670)		0.136	0.015
32	2.67	0.90	0.151	(0.670)		0.136	0.015
33	2.75	1.00	0.168	(0.670)		0.151	0.017
34	2.83	1.00	0.168	(0.670)		0.151	0.017
35	2.92	1.00	0.168	(0.670)		0.151	0.017
36	3.00	1.00	0.168	(0.670)		0.151	0.017
37	3.08	1.00	0.168	(0.670)		0.151	0.017
38	3.17	1.10	0.185	(0.670)		0.166	0.018
39	3.25	1.10	0.185	(0.670)		0.166	0.018
40	3.33	1.10	0.185	(0.670)		0.166	0.018
41	3.42	1.20	0.201	(0.670)		0.181	0.020
42	3.50	1.30	0.218	(0.670)		0.196	0.022
43	3.58	1.40	0.235	(0.670)		0.212	0.024
44	3.67	1.40	0.235	(0.670)		0.212	0.024
45	3.75	1.50	0.252	(0.670)		0.227	0.025
46	3.83	1.50	0.252	(0.670)		0.227	0.025
47	3.92	1.60	0.269	(0.670)		0.242	0.027
48	4.00	1.60	0.269	(0.670)		0.242	0.027
49	4.08	1.70	0.285	(0.670)		0.257	0.029
50	4.17	1.80	0.302	(0.670)		0.272	0.030
51	4.25	1.90	0.319	(0.670)		0.287	0.032
52	4.33	2.00	0.336	(0.670)		0.302	0.034
53	4.42	2.10	0.353	(0.670)		0.317	0.035
54	4.50	2.10	0.353	(0.670)		0.317	0.035
55	4.58	2.20	0.369	(0.670)		0.332	0.037
56	4.67	2.30	0.386	(0.670)		0.347	0.039
57	4.75	2.40	0.403	(0.670)		0.363	0.040
58	4.83	2.40	0.403	(0.670)		0.363	0.040
59	4.92	2.50	0.420	(0.670)		0.378	0.042
60	5.00	2.60	0.436	(0.670)		0.393	0.044
61	5.08	3.10	0.520	(0.670)		0.468	0.052

62	5.17	3.60	0.604	(0.670)	0.544		0.060
63	5.25	3.90	0.655	(0.670)	0.589		0.065
64	5.33	4.20	0.705	(0.670)	0.635		0.071
65	5.42	4.70	0.789	0.670	(0.710)		0.119
66	5.50	5.60	0.940	0.670	(0.846)		0.270
67	5.58	1.90	0.319	(0.670)	0.287		0.032
68	5.67	0.90	0.151	(0.670)	0.136		0.015
69	5.75	0.60	0.101	(0.670)	0.091		0.010
70	5.83	0.50	0.084	(0.670)	0.076		0.008
71	5.92	0.30	0.050	(0.670)	0.045		0.005
72	6.00	0.20	0.034	(0.670)	0.030		0.003

(Loss Rate Not Used)

Sum = 100.0 Sum = 1.9

Flood volume = Effective rainfall 0.16(In)
times area 218.6(Ac.)/[(In)/(Ft.)] = 2.9(Ac.Ft)
Total soil loss = 1.24(In)
Total soil loss = 22.603(Ac.Ft)
Total rainfall = 1.40(In)
Flood volume = 125309.1 Cubic Feet
Total soil loss = 984578.3 Cubic Feet

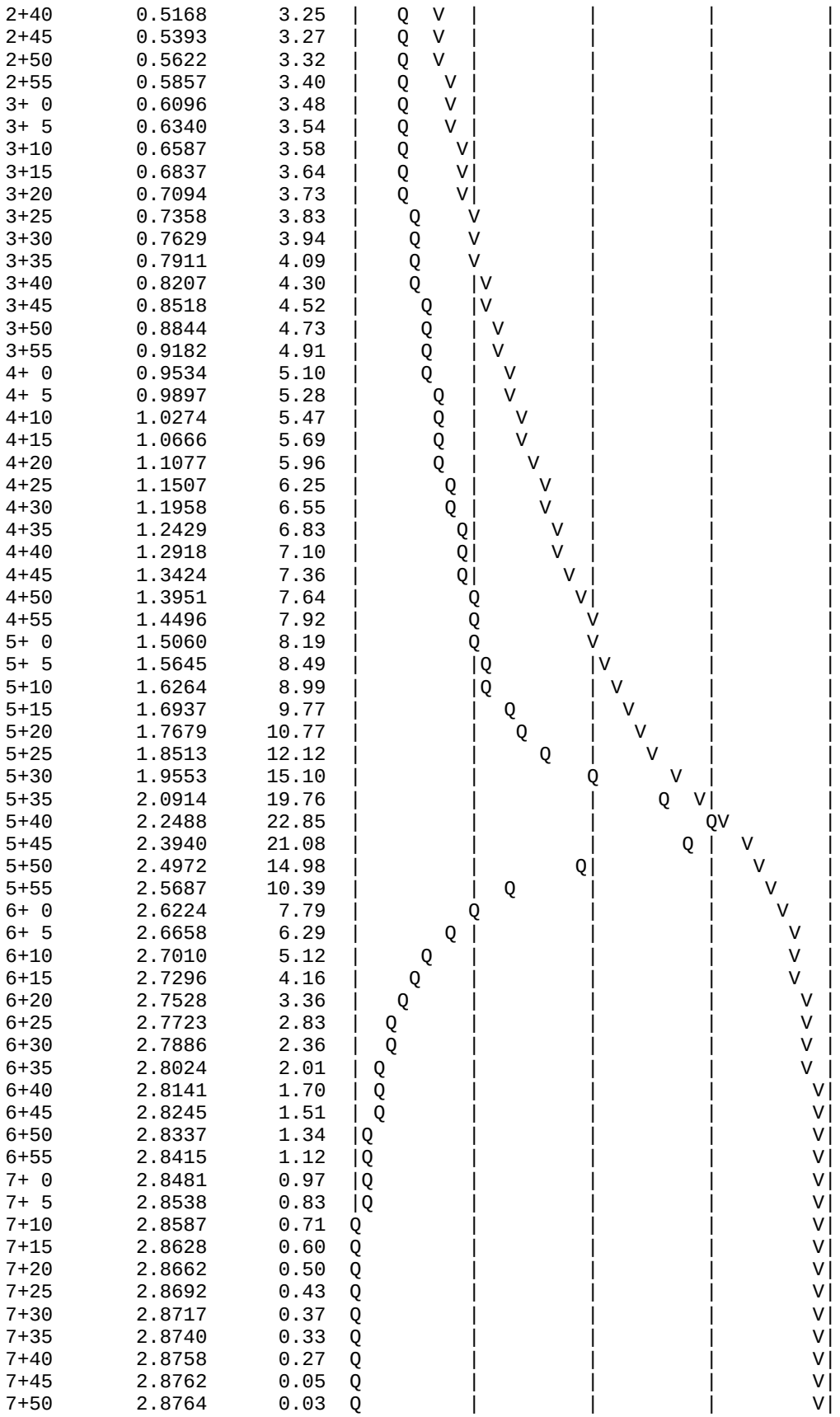
Peak flow rate of this hydrograph = 22.850(CFS)

++

6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0004	0.05	Q				
0+10	0.0022	0.26	Q				
0+15	0.0066	0.64	Q				
0+20	0.0140	1.08	VQ				
0+25	0.0237	1.40	VQ				
0+30	0.0346	1.59	V Q				
0+35	0.0466	1.75	V Q				
0+40	0.0597	1.90	V Q				
0+45	0.0738	2.04	|VQ				
0+50	0.0886	2.15	|VQ				
0+55	0.1039	2.22	|VQ				
1+ 0	0.1197	2.29	|V Q				
1+ 5	0.1361	2.38	|V Q				
1+10	0.1532	2.48	| VQ				
1+15	0.1710	2.59	| VQ				
1+20	0.1894	2.67	| VQ				
1+25	0.2081	2.72	| VQ				
1+30	0.2271	2.76	| Q				
1+35	0.2464	2.79	| Q				
1+40	0.2658	2.82	| Q				
1+45	0.2854	2.84	| Q				
1+50	0.3051	2.86	| QV				
1+55	0.3249	2.88	| QV				
2+ 0	0.3449	2.91	| QV				
2+ 5	0.3652	2.95	| Q V				
2+10	0.3859	3.00	| Q V				
2+15	0.4069	3.06	| QV				
2+20	0.4283	3.10	| QV				
2+25	0.4501	3.16	| Q V				
2+30	0.4722	3.20	| Q V				
2+35	0.4944	3.23	| Q V				



```
    7+55       2.8766      0.02  Q         |         |         |        V|
    8+ 0       2.8766      0.01  Q         |         |         |        V|
    8+ 5       2.8767      0.01  Q         |         |         |        V|
    8+10       2.8767      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: AUH23EXIST32.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "A"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
2 YEAR - 3 HOUR
FN: AUH23EXIST

Drainage Area = 218.56(Ac.) = 0.342 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 218.56(Ac.) = 0.342 Sq. Mi.
Length along longest watercourse = 7012.00(Ft.)
Length along longest watercourse measured to centroid = 3373.00(Ft.)
Length along longest watercourse = 1.328 Mi.
Length along longest watercourse measured to centroid = 0.639 Mi.
Difference in elevation = 321.00(Ft.)
Slope along watercourse = 241.7114 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.278 Hr.
Lag time = 16.69 Min.
25% of lag time = 4.17 Min.
40% of lag time = 6.68 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	1.00	218.56

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	2.40	524.54

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.000(In)
Area Averaged 100-Year Rainfall = 2.400(In)

Point rain (area averaged) = 1.000(In)
Areal adjustment factor = 99.90 %
Adjusted average point rain = 0.999(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
218.560	60.00	0.000

Total Area Entered = 218.56(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
60.0	40.0	0.670	0.000	0.670	1.000	0.670
					Sum (F) =	0.670

Area averaged mean soil loss (F) (In/Hr) = 0.670
Minimum soil loss rate ((In/Hr)) = 0.335
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	29.957	2.894	6.376
2	0.167	59.914	10.603	23.355
3	0.250	89.872	18.530	40.817
4	0.333	119.829	20.150	44.385
5	0.417	149.786	12.840	28.283
6	0.500	179.743	7.392	16.282
7	0.583	209.701	4.765	10.495
8	0.667	239.658	3.715	8.183
9	0.750	269.615	2.997	6.601
10	0.833	299.572	2.496	5.499
11	0.917	329.529	1.990	4.383
12	1.000	359.487	1.773	3.906
13	1.083	389.444	1.430	3.150
14	1.167	419.401	1.243	2.737
15	1.250	449.358	0.981	2.161
16	1.333	479.316	0.930	2.048
17	1.417	509.273	0.887	1.954
18	1.500	539.230	0.716	1.578
19	1.583	569.187	0.634	1.398
20	1.667	599.144	0.547	1.205
21	1.750	629.102	0.483	1.063
22	1.833	659.059	0.414	0.912
23	1.917	689.016	0.329	0.724
24	2.000	718.973	0.300	0.660
25	2.083	748.931	0.300	0.660
26	2.167	778.888	0.300	0.660
27	2.250	808.845	0.361	0.795
			Sum = 100.000	Sum= 220.268

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.156	(0.670)	0.140	0.016
2	0.17	1.30	0.156	(0.670)	0.140	0.016
3	0.25	1.10	0.132	(0.670)	0.119	0.013
4	0.33	1.50	0.180	(0.670)	0.162	0.018
5	0.42	1.50	0.180	(0.670)	0.162	0.018
6	0.50	1.80	0.216	(0.670)	0.194	0.022
7	0.58	1.50	0.180	(0.670)	0.162	0.018
8	0.67	1.80	0.216	(0.670)	0.194	0.022
9	0.75	1.80	0.216	(0.670)	0.194	0.022
10	0.83	1.50	0.180	(0.670)	0.162	0.018
11	0.92	1.60	0.192	(0.670)	0.173	0.019
12	1.00	1.80	0.216	(0.670)	0.194	0.022
13	1.08	2.20	0.264	(0.670)	0.237	0.026
14	1.17	2.20	0.264	(0.670)	0.237	0.026
15	1.25	2.20	0.264	(0.670)	0.237	0.026
16	1.33	2.00	0.240	(0.670)	0.216	0.024
17	1.42	2.60	0.312	(0.670)	0.281	0.031
18	1.50	2.70	0.324	(0.670)	0.291	0.032
19	1.58	2.40	0.288	(0.670)	0.259	0.029
20	1.67	2.70	0.324	(0.670)	0.291	0.032
21	1.75	3.30	0.396	(0.670)	0.356	0.040
22	1.83	3.10	0.372	(0.670)	0.334	0.037
23	1.92	2.90	0.348	(0.670)	0.313	0.035
24	2.00	3.00	0.360	(0.670)	0.324	0.036
25	2.08	3.10	0.372	(0.670)	0.334	0.037
26	2.17	4.20	0.504	(0.670)	0.453	0.050
27	2.25	5.00	0.599	(0.670)	0.539	0.060
28	2.33	3.50	0.420	(0.670)	0.378	0.042
29	2.42	6.80	0.815	0.670	(0.734)	0.145
30	2.50	7.30	0.875	0.670	(0.788)	0.205
31	2.58	8.20	0.983	0.670	(0.885)	0.313
32	2.67	5.90	0.707	(0.670)	0.637	0.071
33	2.75	2.00	0.240	(0.670)	0.216	0.024
34	2.83	1.80	0.216	(0.670)	0.194	0.022
35	2.92	1.80	0.216	(0.670)	0.194	0.022
36	3.00	0.60	0.072	(0.670)	0.065	0.007

(Loss Rate Not Used)

Sum = 100.0 Sum = 1.6

Flood volume = Effective rainfall 0.13(In)
times area 218.6(Ac.)/[(In)/(Ft.)] = 2.4(Ac.Ft)
Total soil loss = 0.87(In)
Total soil loss = 15.774(Ac.Ft)
Total rainfall = 1.00(In)
Flood volume = 105489.8 Cubic Feet
Total soil loss = 687124.4 Cubic Feet

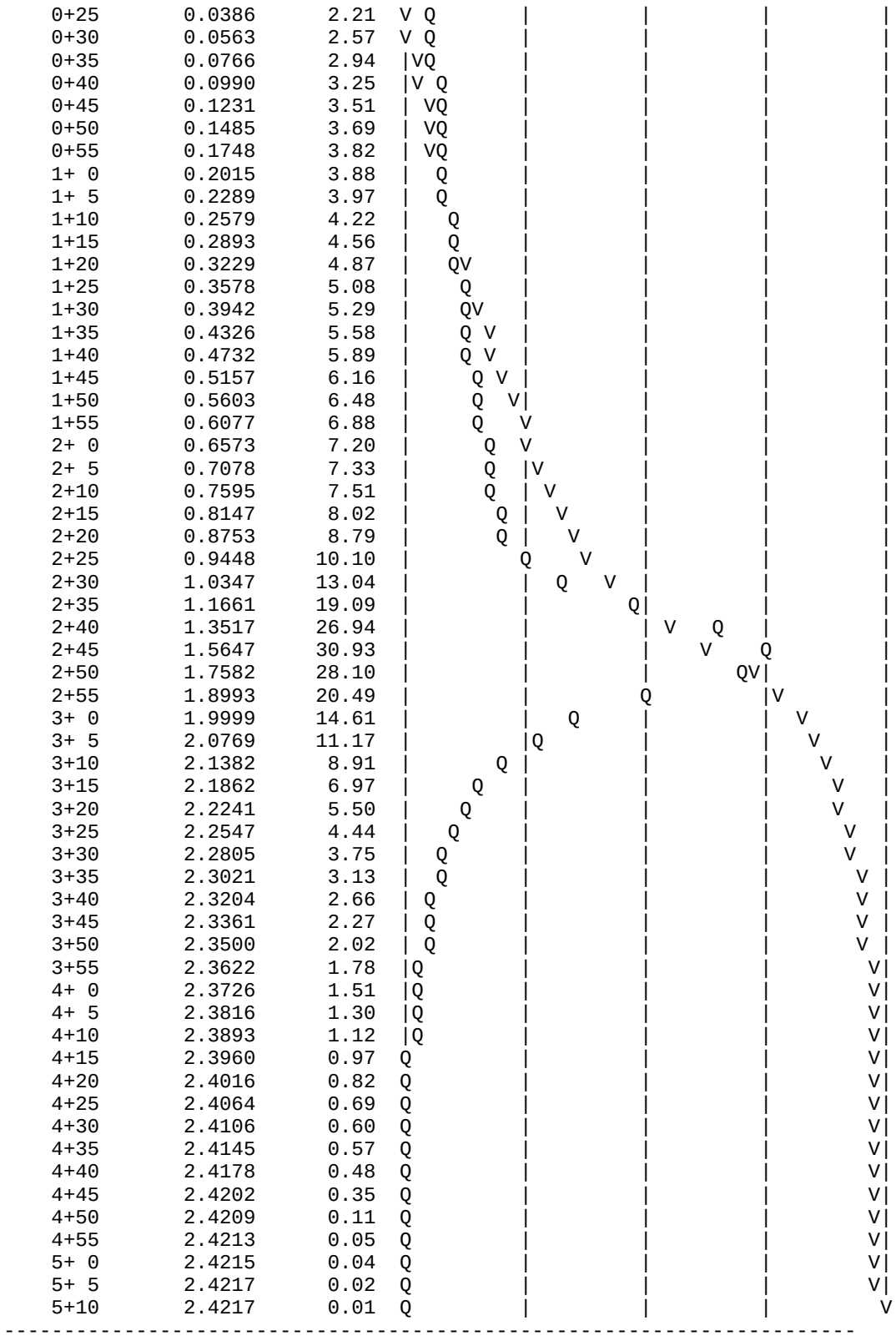
Peak flow rate of this hydrograph = 30.926(CFS)

++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	10.0	20.0	30.0	40.0
0+ 5	0.0007	0.10	Q	|	|	|	|
0+10	0.0039	0.46	Q	|	|	|	|
0+15	0.0113	1.08	VQ	|	|	|	|
0+20	0.0234	1.75	VQ	|	|	|	|



U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: AUH21EXIST12.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "A"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
2 YEAR - 1 HOUR
FN: AUH21EXIST

Drainage Area = 218.56(Ac.) = 0.342 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 218.56(Ac.) = 0.342 Sq. Mi.
Length along longest watercourse = 7012.00(Ft.)
Length along longest watercourse measured to centroid = 3373.00(Ft.)
Length along longest watercourse = 1.328 Mi.
Length along longest watercourse measured to centroid = 0.639 Mi.
Difference in elevation = 321.00(Ft.)
Slope along watercourse = 241.7114 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.278 Hr.
Lag time = 16.69 Min.
25% of lag time = 4.17 Min.
40% of lag time = 6.68 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	0.55	120.21

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
218.56	1.36	297.24

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 0.550(In)
Area Averaged 100-Year Rainfall = 1.360(In)

Point rain (area averaged) = 0.550(In)
Areal adjustment factor = 99.80 %
Adjusted average point rain = 0.549(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
218.560	60.00	0.000

Total Area Entered = 218.56(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
60.0	40.0	0.670	0.000	0.670	1.000	0.670
					Sum (F) =	0.670

Area averaged mean soil loss (F) (In/Hr) = 0.670
Minimum soil loss rate ((In/Hr)) = 0.335
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.4800

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	29.957	2.894	6.376
2	0.167	59.914	10.603	23.355
3	0.250	89.872	18.530	40.817
4	0.333	119.829	20.150	44.385
5	0.417	149.786	12.840	28.283
6	0.500	179.743	7.392	16.282
7	0.583	209.701	4.765	10.495
8	0.667	239.658	3.715	8.183
9	0.750	269.615	2.997	6.601
10	0.833	299.572	2.496	5.499
11	0.917	329.529	1.990	4.383
12	1.000	359.487	1.773	3.906
13	1.083	389.444	1.430	3.150
14	1.167	419.401	1.243	2.737
15	1.250	449.358	0.981	2.161
16	1.333	479.316	0.930	2.048
17	1.417	509.273	0.887	1.954
18	1.500	539.230	0.716	1.578
19	1.583	569.187	0.634	1.398
20	1.667	599.144	0.547	1.205
21	1.750	629.102	0.483	1.063
22	1.833	659.059	0.414	0.912
23	1.917	689.016	0.329	0.724
24	2.000	718.973	0.300	0.660
25	2.083	748.931	0.300	0.660
26	2.167	778.888	0.300	0.660
27	2.250	808.845	0.361	0.795
			Sum = 100.000	Sum= 220.268

The following loss rate calculations reflect use of the minimum calculated loss

rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	4.40	0.290	(0.670)	0.261	0.029
2	0.17	4.50	0.296	(0.670)	0.267	0.030
3	0.25	5.40	0.356	(0.670)	0.320	0.036
4	0.33	5.40	0.356	(0.670)	0.320	0.036
5	0.42	5.70	0.375	(0.670)	0.338	0.038
6	0.50	6.40	0.422	(0.670)	0.379	0.042
7	0.58	7.90	0.520	(0.670)	0.468	0.052
8	0.67	9.10	0.599	(0.670)	0.539	0.060
9	0.75	12.80	0.843	0.670	(0.759)	0.173
10	0.83	25.60	1.686	0.670	(1.518)	1.016
11	0.92	7.90	0.520	(0.670)	0.468	0.052
12	1.00	4.90	0.323	(0.670)	0.290	0.032
	(Loss Rate Not Used)					
Sum =		100.0			Sum =	1.6

Flood volume = Effective rainfall 0.13(In)
times area 218.6(Ac.)/[(In)/(Ft.)] = 2.4(Ac.Ft)
Total soil loss = 0.42(In)
Total soil loss = 7.576(Ac.Ft)
Total rainfall = 0.55(In)
Flood volume = 105488.5 Cubic Feet
Total soil loss = 330002.3 Cubic Feet

Peak flow rate of this hydrograph = 55.597(CFS)

++

1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	15.0	30.0	45.0	60.0
0+ 5	0.0013	0.18	Q				
0+10	0.0072	0.87	Q				
0+15	0.0217	2.10	VQ				
0+20	0.0462	3.56	V Q				
0+25	0.0783	4.66	V Q				
0+30	0.1161	5.49	V Q				
0+35	0.1590	6.22	V Q				
0+40	0.2080	7.12	VQ				
0+45	0.2697	8.95	VQ				
0+50	0.3944	18.12	V	Q			
0+55	0.6506	37.19	V		Q		
1+ 0	1.0266	54.60		V		Q	
1+ 5	1.4095	55.60			V	Q	
1+10	1.6659	37.22			Q V		
1+15	1.8237	22.91		Q		V	
1+20	1.9283	15.20		Q		V	
1+25	2.0087	11.67	Q			V	
1+30	2.0734	9.39	Q			V	
1+35	2.1270	7.78	Q			V	
1+40	2.1706	6.34	Q			V	
1+45	2.2087	5.53	Q			V	
1+50	2.2401	4.55	Q			V	
1+55	2.2671	3.92	Q			V	
2+ 0	2.2892	3.21	Q			V	
2+ 5	2.3097	2.98	Q			V	
2+10	2.3287	2.75	Q			V	

```
    2+15       2.3445      2.30  |Q        |         |         |       V |
    2+20       2.3583      2.01  |Q        |         |         |       V |
    2+25       2.3703      1.73  |Q        |         |         |        V|
    2+30       2.3806      1.51  |Q        |         |         |        V|
    2+35       2.3894      1.28  Q         |         |         |        V|
    2+40       2.3966      1.04  Q         |         |         |        V|
    2+45       2.4030      0.93  Q         |         |         |        V|
    2+50       2.4092      0.89  Q         |         |         |        V|
    2+55       2.4151      0.86  Q         |         |         |        V|
    3+ 0       2.4211      0.86  Q         |         |         |        V|
    3+ 5       2.4215      0.06  Q         |         |         |        V|
    3+10       2.4217      0.03  Q         |         |         |         V
-------------------------------------------------------------------------
```

APPENDIX G: HYDROLOGY CALCULATIONS BASED ON EXISTING CONDITION FOR AREA “B” (HYDROGRAPH METHOD)

APPENDIX G.1: AREA “B” – EXISTING CONDITION HYDROGRAPH CALCULATIONS 100–YEAR

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: BUH10024EXIST24100.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "B"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
100 YEAR - 24 HOUR
FN: BUH10024EXIST

Drainage Area = 22.17(Ac.) = 0.035 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 22.17(Ac.) = 0.035 Sq. Mi.
Length along longest watercourse = 1554.00(Ft.)
Length along longest watercourse measured to centroid = 665.00(Ft.)
Length along longest watercourse = 0.294 Mi.
Length along longest watercourse measured to centroid = 0.126 Mi.
Difference in elevation = 68.00(Ft.)
Slope along watercourse = 231.0425 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.085 Hr.
Lag time = 5.12 Min.
25% of lag time = 1.28 Min.
40% of lag time = 2.05 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	2.50	55.43

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	8.00	177.36

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 2.500(In)
Area Averaged 100-Year Rainfall = 8.000(In)

Point rain (area averaged) = 8.000(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 8.000(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.170	71.00	0.000

Total Area Entered = 22.17(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
71.0	71.0	0.350	0.000	0.350	1.000	0.350
					Sum (F) =	0.350

Area averaged mean soil loss (F) (In/Hr) = 0.350
Minimum soil loss rate ((In/Hr)) = 0.175
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	97.593	18.462	4.125
2	0.167	195.186	48.190	10.767
3	0.250	292.779	16.014	3.578
4	0.333	390.372	7.192	1.607
5	0.417	487.965	4.075	0.911
6	0.500	585.559	2.644	0.591
7	0.583	683.152	1.677	0.375
8	0.667	780.745	1.065	0.238
9	0.750	878.338	0.681	0.152
		Sum = 100.000	Sum=	22.343

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1	0.08	0.07	0.064	(0.621)		0.058	0.006
2	0.17	0.07	0.064	(0.618)		0.058	0.006
3	0.25	0.07	0.064	(0.616)		0.058	0.006
4	0.33	0.10	0.096	(0.614)		0.086	0.010
5	0.42	0.10	0.096	(0.611)		0.086	0.010
6	0.50	0.10	0.096	(0.609)		0.086	0.010
7	0.58	0.10	0.096	(0.606)		0.086	0.010
8	0.67	0.10	0.096	(0.604)		0.086	0.010
9	0.75	0.10	0.096	(0.602)		0.086	0.010
10	0.83	0.13	0.128	(0.599)		0.115	0.013
11	0.92	0.13	0.128	(0.597)		0.115	0.013
12	1.00	0.13	0.128	(0.595)		0.115	0.013
13	1.08	0.10	0.096	(0.592)		0.086	0.010
14	1.17	0.10	0.096	(0.590)		0.086	0.010
15	1.25	0.10	0.096	(0.588)		0.086	0.010
16	1.33	0.10	0.096	(0.585)		0.086	0.010

17	1.42	0.10	0.096	(0.583)	0.086	0.010
18	1.50	0.10	0.096	(0.581)	0.086	0.010
19	1.58	0.10	0.096	(0.578)	0.086	0.010
20	1.67	0.10	0.096	(0.576)	0.086	0.010
21	1.75	0.10	0.096	(0.574)	0.086	0.010
22	1.83	0.13	0.128	(0.571)	0.115	0.013
23	1.92	0.13	0.128	(0.569)	0.115	0.013
24	2.00	0.13	0.128	(0.567)	0.115	0.013
25	2.08	0.13	0.128	(0.564)	0.115	0.013
26	2.17	0.13	0.128	(0.562)	0.115	0.013
27	2.25	0.13	0.128	(0.560)	0.115	0.013
28	2.33	0.13	0.128	(0.558)	0.115	0.013
29	2.42	0.13	0.128	(0.555)	0.115	0.013
30	2.50	0.13	0.128	(0.553)	0.115	0.013
31	2.58	0.17	0.160	(0.551)	0.144	0.016
32	2.67	0.17	0.160	(0.549)	0.144	0.016
33	2.75	0.17	0.160	(0.546)	0.144	0.016
34	2.83	0.17	0.160	(0.544)	0.144	0.016
35	2.92	0.17	0.160	(0.542)	0.144	0.016
36	3.00	0.17	0.160	(0.540)	0.144	0.016
37	3.08	0.17	0.160	(0.537)	0.144	0.016
38	3.17	0.17	0.160	(0.535)	0.144	0.016
39	3.25	0.17	0.160	(0.533)	0.144	0.016
40	3.33	0.17	0.160	(0.531)	0.144	0.016
41	3.42	0.17	0.160	(0.528)	0.144	0.016
42	3.50	0.17	0.160	(0.526)	0.144	0.016
43	3.58	0.17	0.160	(0.524)	0.144	0.016
44	3.67	0.17	0.160	(0.522)	0.144	0.016
45	3.75	0.17	0.160	(0.520)	0.144	0.016
46	3.83	0.20	0.192	(0.517)	0.173	0.019
47	3.92	0.20	0.192	(0.515)	0.173	0.019
48	4.00	0.20	0.192	(0.513)	0.173	0.019
49	4.08	0.20	0.192	(0.511)	0.173	0.019
50	4.17	0.20	0.192	(0.509)	0.173	0.019
51	4.25	0.20	0.192	(0.507)	0.173	0.019
52	4.33	0.23	0.224	(0.504)	0.202	0.022
53	4.42	0.23	0.224	(0.502)	0.202	0.022
54	4.50	0.23	0.224	(0.500)	0.202	0.022
55	4.58	0.23	0.224	(0.498)	0.202	0.022
56	4.67	0.23	0.224	(0.496)	0.202	0.022
57	4.75	0.23	0.224	(0.494)	0.202	0.022
58	4.83	0.27	0.256	(0.492)	0.230	0.026
59	4.92	0.27	0.256	(0.489)	0.230	0.026
60	5.00	0.27	0.256	(0.487)	0.230	0.026
61	5.08	0.20	0.192	(0.485)	0.173	0.019
62	5.17	0.20	0.192	(0.483)	0.173	0.019
63	5.25	0.20	0.192	(0.481)	0.173	0.019
64	5.33	0.23	0.224	(0.479)	0.202	0.022
65	5.42	0.23	0.224	(0.477)	0.202	0.022
66	5.50	0.23	0.224	(0.475)	0.202	0.022
67	5.58	0.27	0.256	(0.473)	0.230	0.026
68	5.67	0.27	0.256	(0.471)	0.230	0.026
69	5.75	0.27	0.256	(0.468)	0.230	0.026
70	5.83	0.27	0.256	(0.466)	0.230	0.026
71	5.92	0.27	0.256	(0.464)	0.230	0.026
72	6.00	0.27	0.256	(0.462)	0.230	0.026
73	6.08	0.30	0.288	(0.460)	0.259	0.029
74	6.17	0.30	0.288	(0.458)	0.259	0.029
75	6.25	0.30	0.288	(0.456)	0.259	0.029
76	6.33	0.30	0.288	(0.454)	0.259	0.029
77	6.42	0.30	0.288	(0.452)	0.259	0.029
78	6.50	0.30	0.288	(0.450)	0.259	0.029
79	6.58	0.33	0.320	(0.448)	0.288	0.032

80	6.67	0.33	0.320	(0.446)	0.288	0.032
81	6.75	0.33	0.320	(0.444)	0.288	0.032
82	6.83	0.33	0.320	(0.442)	0.288	0.032
83	6.92	0.33	0.320	(0.440)	0.288	0.032
84	7.00	0.33	0.320	(0.438)	0.288	0.032
85	7.08	0.33	0.320	(0.436)	0.288	0.032
86	7.17	0.33	0.320	(0.434)	0.288	0.032
87	7.25	0.33	0.320	(0.432)	0.288	0.032
88	7.33	0.37	0.352	(0.430)	0.317	0.035
89	7.42	0.37	0.352	(0.428)	0.317	0.035
90	7.50	0.37	0.352	(0.426)	0.317	0.035
91	7.58	0.40	0.384	(0.424)	0.346	0.038
92	7.67	0.40	0.384	(0.422)	0.346	0.038
93	7.75	0.40	0.384	(0.420)	0.346	0.038
94	7.83	0.43	0.416	(0.418)	0.374	0.042
95	7.92	0.43	0.416	(0.416)	0.374	0.042
96	8.00	0.43	0.416	(0.414)	0.374	0.042
97	8.08	0.50	0.480	0.413	(0.432)	0.067
98	8.17	0.50	0.480	0.411	(0.432)	0.069
99	8.25	0.50	0.480	0.409	(0.432)	0.071
100	8.33	0.50	0.480	0.407	(0.432)	0.073
101	8.42	0.50	0.480	0.405	(0.432)	0.075
102	8.50	0.50	0.480	0.403	(0.432)	0.077
103	8.58	0.53	0.512	0.401	(0.461)	0.111
104	8.67	0.53	0.512	0.399	(0.461)	0.113
105	8.75	0.53	0.512	0.397	(0.461)	0.115
106	8.83	0.57	0.544	0.395	(0.490)	0.149
107	8.92	0.57	0.544	0.394	(0.490)	0.150
108	9.00	0.57	0.544	0.392	(0.490)	0.152
109	9.08	0.63	0.608	0.390	(0.547)	0.218
110	9.17	0.63	0.608	0.388	(0.547)	0.220
111	9.25	0.63	0.608	0.386	(0.547)	0.222
112	9.33	0.67	0.640	0.384	(0.576)	0.256
113	9.42	0.67	0.640	0.382	(0.576)	0.257
114	9.50	0.67	0.640	0.381	(0.576)	0.259
115	9.58	0.70	0.672	0.379	(0.605)	0.293
116	9.67	0.70	0.672	0.377	(0.605)	0.295
117	9.75	0.70	0.672	0.375	(0.605)	0.297
118	9.83	0.73	0.704	0.373	(0.634)	0.331
119	9.92	0.73	0.704	0.372	(0.634)	0.332
120	10.00	0.73	0.704	0.370	(0.634)	0.334
121	10.08	0.50	0.480	0.368	(0.432)	0.112
122	10.17	0.50	0.480	0.366	(0.432)	0.114
123	10.25	0.50	0.480	0.364	(0.432)	0.116
124	10.33	0.50	0.480	0.363	(0.432)	0.117
125	10.42	0.50	0.480	0.361	(0.432)	0.119
126	10.50	0.50	0.480	0.359	(0.432)	0.121
127	10.58	0.67	0.640	0.357	(0.576)	0.283
128	10.67	0.67	0.640	0.356	(0.576)	0.284
129	10.75	0.67	0.640	0.354	(0.576)	0.286
130	10.83	0.67	0.640	0.352	(0.576)	0.288
131	10.92	0.67	0.640	0.350	(0.576)	0.290
132	11.00	0.67	0.640	0.349	(0.576)	0.291
133	11.08	0.63	0.608	0.347	(0.547)	0.261
134	11.17	0.63	0.608	0.345	(0.547)	0.263
135	11.25	0.63	0.608	0.344	(0.547)	0.264
136	11.33	0.63	0.608	0.342	(0.547)	0.266
137	11.42	0.63	0.608	0.340	(0.547)	0.268
138	11.50	0.63	0.608	0.339	(0.547)	0.269
139	11.58	0.57	0.544	0.337	(0.490)	0.207
140	11.67	0.57	0.544	0.335	(0.490)	0.209
141	11.75	0.57	0.544	0.334	(0.490)	0.210
142	11.83	0.60	0.576	0.332	(0.518)	0.244

143	11.92	0.60	0.576	0.330	(0.518)	0.246
144	12.00	0.60	0.576	0.329	(0.518)	0.247
145	12.08	0.83	0.800	0.327	(0.720)	0.473
146	12.17	0.83	0.800	0.325	(0.720)	0.475
147	12.25	0.83	0.800	0.324	(0.720)	0.476
148	12.33	0.87	0.832	0.322	(0.749)	0.510
149	12.42	0.87	0.832	0.320	(0.749)	0.512
150	12.50	0.87	0.832	0.319	(0.749)	0.513
151	12.58	0.93	0.896	0.317	(0.806)	0.579
152	12.67	0.93	0.896	0.316	(0.806)	0.580
153	12.75	0.93	0.896	0.314	(0.806)	0.582
154	12.83	0.97	0.928	0.312	(0.835)	0.616
155	12.92	0.97	0.928	0.311	(0.835)	0.617
156	13.00	0.97	0.928	0.309	(0.835)	0.619
157	13.08	1.13	1.088	0.308	(0.979)	0.780
158	13.17	1.13	1.088	0.306	(0.979)	0.782
159	13.25	1.13	1.088	0.305	(0.979)	0.783
160	13.33	1.13	1.088	0.303	(0.979)	0.785
161	13.42	1.13	1.088	0.301	(0.979)	0.786
162	13.50	1.13	1.088	0.300	(0.979)	0.788
163	13.58	0.77	0.736	0.298	(0.662)	0.438
164	13.67	0.77	0.736	0.297	(0.662)	0.439
165	13.75	0.77	0.736	0.295	(0.662)	0.441
166	13.83	0.77	0.736	0.294	(0.662)	0.442
167	13.92	0.77	0.736	0.292	(0.662)	0.444
168	14.00	0.77	0.736	0.291	(0.662)	0.445
169	14.08	0.90	0.864	0.289	(0.778)	0.575
170	14.17	0.90	0.864	0.288	(0.778)	0.576
171	14.25	0.90	0.864	0.286	(0.778)	0.578
172	14.33	0.87	0.832	0.285	(0.749)	0.547
173	14.42	0.87	0.832	0.284	(0.749)	0.548
174	14.50	0.87	0.832	0.282	(0.749)	0.550
175	14.58	0.87	0.832	0.281	(0.749)	0.551
176	14.67	0.87	0.832	0.279	(0.749)	0.553
177	14.75	0.87	0.832	0.278	(0.749)	0.554
178	14.83	0.83	0.800	0.276	(0.720)	0.524
179	14.92	0.83	0.800	0.275	(0.720)	0.525
180	15.00	0.83	0.800	0.274	(0.720)	0.526
181	15.08	0.80	0.768	0.272	(0.691)	0.496
182	15.17	0.80	0.768	0.271	(0.691)	0.497
183	15.25	0.80	0.768	0.269	(0.691)	0.499
184	15.33	0.77	0.736	0.268	(0.662)	0.468
185	15.42	0.77	0.736	0.267	(0.662)	0.469
186	15.50	0.77	0.736	0.265	(0.662)	0.471
187	15.58	0.63	0.608	0.264	(0.547)	0.344
188	15.67	0.63	0.608	0.263	(0.547)	0.345
189	15.75	0.63	0.608	0.261	(0.547)	0.347
190	15.83	0.63	0.608	0.260	(0.547)	0.348
191	15.92	0.63	0.608	0.258	(0.547)	0.349
192	16.00	0.63	0.608	0.257	(0.547)	0.351
193	16.08	0.13	0.128	(0.256)	0.115	0.013
194	16.17	0.13	0.128	(0.255)	0.115	0.013
195	16.25	0.13	0.128	(0.253)	0.115	0.013
196	16.33	0.13	0.128	(0.252)	0.115	0.013
197	16.42	0.13	0.128	(0.251)	0.115	0.013
198	16.50	0.13	0.128	(0.249)	0.115	0.013
199	16.58	0.10	0.096	(0.248)	0.086	0.010
200	16.67	0.10	0.096	(0.247)	0.086	0.010
201	16.75	0.10	0.096	(0.246)	0.086	0.010
202	16.83	0.10	0.096	(0.244)	0.086	0.010
203	16.92	0.10	0.096	(0.243)	0.086	0.010
204	17.00	0.10	0.096	(0.242)	0.086	0.010
205	17.08	0.17	0.160	(0.241)	0.144	0.016

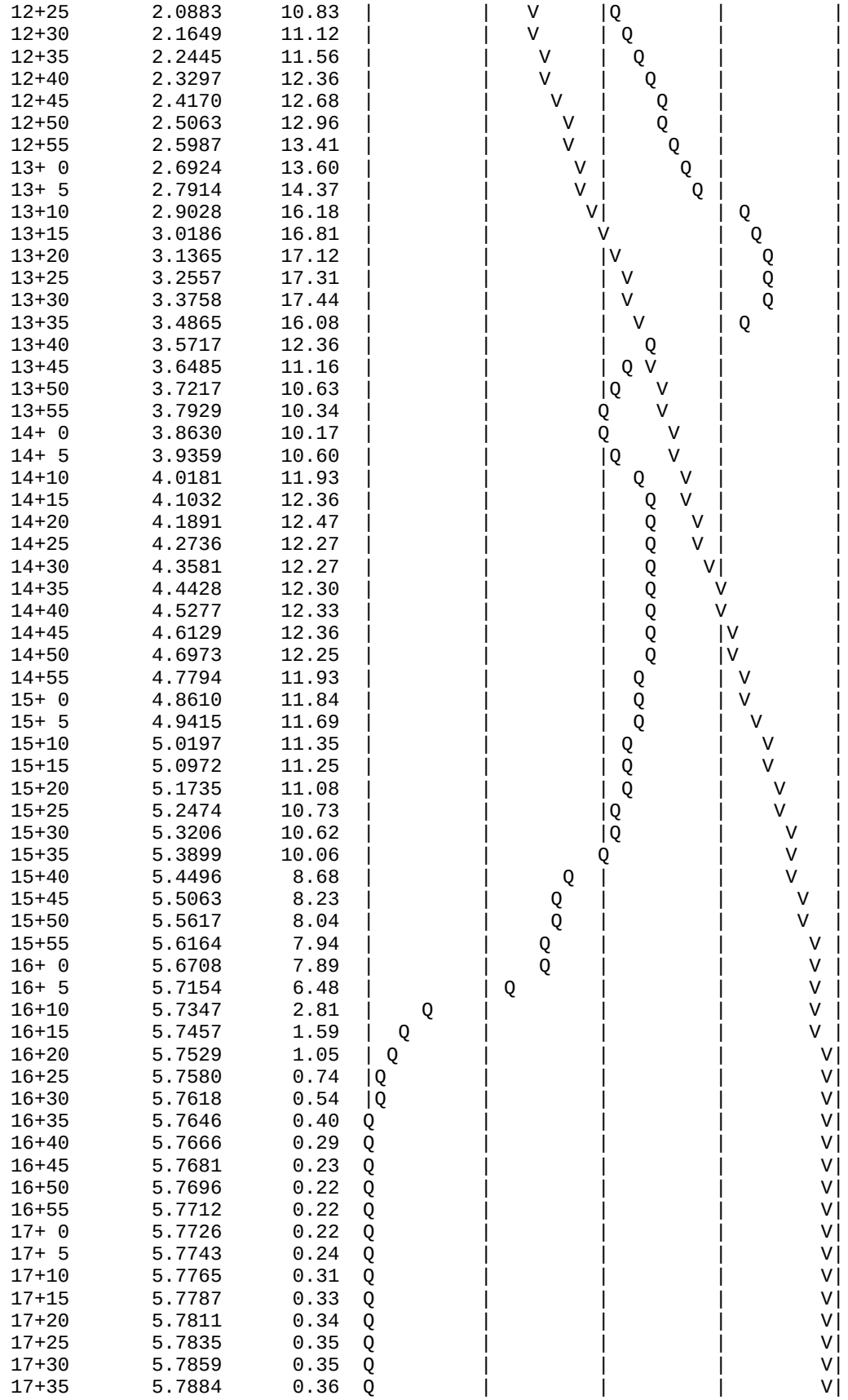
206	17.17	0.17	0.160	(0.239)	0.144	0.016
207	17.25	0.17	0.160	(0.238)	0.144	0.016
208	17.33	0.17	0.160	(0.237)	0.144	0.016
209	17.42	0.17	0.160	(0.236)	0.144	0.016
210	17.50	0.17	0.160	(0.235)	0.144	0.016
211	17.58	0.17	0.160	(0.234)	0.144	0.016
212	17.67	0.17	0.160	(0.232)	0.144	0.016
213	17.75	0.17	0.160	(0.231)	0.144	0.016
214	17.83	0.13	0.128	(0.230)	0.115	0.013
215	17.92	0.13	0.128	(0.229)	0.115	0.013
216	18.00	0.13	0.128	(0.228)	0.115	0.013
217	18.08	0.13	0.128	(0.227)	0.115	0.013
218	18.17	0.13	0.128	(0.226)	0.115	0.013
219	18.25	0.13	0.128	(0.224)	0.115	0.013
220	18.33	0.13	0.128	(0.223)	0.115	0.013
221	18.42	0.13	0.128	(0.222)	0.115	0.013
222	18.50	0.13	0.128	(0.221)	0.115	0.013
223	18.58	0.10	0.096	(0.220)	0.086	0.010
224	18.67	0.10	0.096	(0.219)	0.086	0.010
225	18.75	0.10	0.096	(0.218)	0.086	0.010
226	18.83	0.07	0.064	(0.217)	0.058	0.006
227	18.92	0.07	0.064	(0.216)	0.058	0.006
228	19.00	0.07	0.064	(0.215)	0.058	0.006
229	19.08	0.10	0.096	(0.214)	0.086	0.010
230	19.17	0.10	0.096	(0.213)	0.086	0.010
231	19.25	0.10	0.096	(0.212)	0.086	0.010
232	19.33	0.13	0.128	(0.211)	0.115	0.013
233	19.42	0.13	0.128	(0.210)	0.115	0.013
234	19.50	0.13	0.128	(0.209)	0.115	0.013
235	19.58	0.10	0.096	(0.208)	0.086	0.010
236	19.67	0.10	0.096	(0.207)	0.086	0.010
237	19.75	0.10	0.096	(0.206)	0.086	0.010
238	19.83	0.07	0.064	(0.205)	0.058	0.006
239	19.92	0.07	0.064	(0.204)	0.058	0.006
240	20.00	0.07	0.064	(0.203)	0.058	0.006
241	20.08	0.10	0.096	(0.202)	0.086	0.010
242	20.17	0.10	0.096	(0.202)	0.086	0.010
243	20.25	0.10	0.096	(0.201)	0.086	0.010
244	20.33	0.10	0.096	(0.200)	0.086	0.010
245	20.42	0.10	0.096	(0.199)	0.086	0.010
246	20.50	0.10	0.096	(0.198)	0.086	0.010
247	20.58	0.10	0.096	(0.197)	0.086	0.010
248	20.67	0.10	0.096	(0.196)	0.086	0.010
249	20.75	0.10	0.096	(0.196)	0.086	0.010
250	20.83	0.07	0.064	(0.195)	0.058	0.006
251	20.92	0.07	0.064	(0.194)	0.058	0.006
252	21.00	0.07	0.064	(0.193)	0.058	0.006
253	21.08	0.10	0.096	(0.193)	0.086	0.010
254	21.17	0.10	0.096	(0.192)	0.086	0.010
255	21.25	0.10	0.096	(0.191)	0.086	0.010
256	21.33	0.07	0.064	(0.190)	0.058	0.006
257	21.42	0.07	0.064	(0.190)	0.058	0.006
258	21.50	0.07	0.064	(0.189)	0.058	0.006
259	21.58	0.10	0.096	(0.188)	0.086	0.010
260	21.67	0.10	0.096	(0.187)	0.086	0.010
261	21.75	0.10	0.096	(0.187)	0.086	0.010
262	21.83	0.07	0.064	(0.186)	0.058	0.006
263	21.92	0.07	0.064	(0.186)	0.058	0.006
264	22.00	0.07	0.064	(0.185)	0.058	0.006
265	22.08	0.10	0.096	(0.184)	0.086	0.010
266	22.17	0.10	0.096	(0.184)	0.086	0.010
267	22.25	0.10	0.096	(0.183)	0.086	0.010
268	22.33	0.07	0.064	(0.183)	0.058	0.006

```
269  22.42     0.07      0.064       (  0.182)       0.058        0.006
270  22.50     0.07      0.064       (  0.181)       0.058        0.006
271  22.58     0.07      0.064       (  0.181)       0.058        0.006
272  22.67     0.07      0.064       (  0.180)       0.058        0.006
273  22.75     0.07      0.064       (  0.180)       0.058        0.006
274  22.83     0.07      0.064       (  0.179)       0.058        0.006
275  22.92     0.07      0.064       (  0.179)       0.058        0.006
276  23.00     0.07      0.064       (  0.179)       0.058        0.006
277  23.08     0.07      0.064       (  0.178)       0.058        0.006
278  23.17     0.07      0.064       (  0.178)       0.058        0.006
279  23.25     0.07      0.064       (  0.177)       0.058        0.006
280  23.33     0.07      0.064       (  0.177)       0.058        0.006
281  23.42     0.07      0.064       (  0.177)       0.058        0.006
282  23.50     0.07      0.064       (  0.176)       0.058        0.006
283  23.58     0.07      0.064       (  0.176)       0.058        0.006
284  23.67     0.07      0.064       (  0.176)       0.058        0.006
285  23.75     0.07      0.064       (  0.176)       0.058        0.006
286  23.83     0.07      0.064       (  0.175)       0.058        0.006
287  23.92     0.07      0.064       (  0.175)       0.058        0.006
288  24.00     0.07      0.064       (  0.175)       0.058        0.006
            (Loss Rate Not Used)
    Sum =     100.0                                  Sum =    38.3
     Flood volume = Effective rainfall      3.19(In)
      times area      22.2(Ac.)/[(In)/(Ft.)] =       5.9(Ac.Ft)
     Total soil loss =      4.81(In)
     Total soil loss =     8.883(Ac.Ft)
     Total rainfall =      8.00(In)
     Flood volume =      256835.3 Cubic Feet
     Total soil loss =      386953.6 Cubic Feet
     ---------------------------------------------------------------------
      Peak flow rate of this hydrograph =     17.440(CFS)
     ---------------------------------------------------------------------
     +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
     ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

     ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
 ---------------------------------------------------------------------------
   0+ 5       0.0002      0.03  Q         |         |         |         |
   0+10       0.0008      0.10  Q         |         |         |         |
   0+15       0.0017      0.12  Q         |         |         |         |
   0+20       0.0026      0.14  Q         |         |         |         |
   0+25       0.0039      0.18  Q         |         |         |         |
   0+30       0.0052      0.20  Q         |         |         |         |
   0+35       0.0067      0.20  Q         |         |         |         |
   0+40       0.0081      0.21  Q         |         |         |         |
   0+45       0.0096      0.21  Q         |         |         |         |
   0+50       0.0111      0.23  Q         |         |         |         |
   0+55       0.0129      0.26  Q         |         |         |         |
   1+ 0       0.0148      0.27  Q         |         |         |         |
   1+ 5       0.0166      0.27  Q         |         |         |         |
   1+10       0.0182      0.23  Q         |         |         |         |
   1+15       0.0198      0.22  Q         |         |         |         |
   1+20       0.0213      0.22  Q         |         |         |         |
   1+25       0.0228      0.22  Q         |         |         |         |
   1+30       0.0243      0.22  Q         |         |         |         |
   1+35       0.0258      0.22  Q         |         |         |         |
   1+40       0.0273      0.22  Q         |         |         |         |
   1+45       0.0288      0.21  Q         |         |         |         |
   1+50       0.0303      0.23  Q         |         |         |         |
```

1+55	0.0321	0.26	Q	|	|	|	|
2+ 0	0.0340	0.27	Q	|	|	|	|
2+ 5	0.0359	0.28	Q	|	|	|	|
2+10	0.0379	0.28	Q	|	|	|	|
2+15	0.0398	0.28	Q	|	|	|	|
2+20	0.0418	0.28	Q	|	|	|	|
2+25	0.0438	0.29	Q	|	|	|	|
2+30	0.0457	0.29	Q	|	|	|	|
2+35	0.0478	0.30	Q	|	|	|	|
2+40	0.0501	0.33	Q	|	|	|	|
2+45	0.0525	0.35	Q	|	|	|	|
2+50	0.0549	0.35	Q	|	|	|	|
2+55	0.0573	0.35	Q	|	|	|	|
3+ 0	0.0598	0.36	Q	|	|	|	|
3+ 5	0.0622	0.36	Q	|	|	|	|
3+10	0.0647	0.36	Q	|	|	|	|
3+15	0.0671	0.36	Q	|	|	|	|
3+20	0.0696	0.36	Q	|	|	|	|
3+25	0.0721	0.36	Q	|	|	|	|
3+30	0.0745	0.36	Q	|	|	|	|
3+35	0.0770	0.36	Q	|	|	|	|
3+40	0.0795	0.36	Q	|	|	|	|
3+45	0.0819	0.36	Q	|	|	|	|
3+50	0.0845	0.37	Q	|	|	|	|
3+55	0.0873	0.41	Q	|	|	|	|
4+ 0	0.0901	0.42	Q	|	|	|	|
4+ 5	0.0930	0.42	Q	|	|	|	|
4+10	0.0960	0.42	Q	|	|	|	|
4+15	0.0989	0.43	Q	|	|	|	|
4+20	0.1019	0.44	Q	|	|	|	|
4+25	0.1052	0.48	Q	|	|	|	|
4+30	0.1086	0.49	Q	|	|	|	|
4+35	0.1120	0.49	Q	|	|	|	|
4+40	0.1154	0.50	Q	|	|	|	|
4+45	0.1188	0.50	Q	|	|	|	|
4+50	0.1224	0.51	VQ	|	|	|	|
4+55	0.1261	0.55	VQ	|	|	|	|
5+ 0	0.1300	0.56	VQ	|	|	|	|
5+ 5	0.1337	0.54	VQ	|	|	|	|
5+10	0.1370	0.47	Q	|	|	|	|
5+15	0.1401	0.45	Q	|	|	|	|
5+20	0.1432	0.46	Q	|	|	|	|
5+25	0.1466	0.49	Q	|	|	|	|
5+30	0.1499	0.49	QV	|	|	|	|
5+35	0.1535	0.51	|Q	|	|	|	|
5+40	0.1572	0.55	|Q	|	|	|	|
5+45	0.1610	0.56	|Q	|	|	|	|
5+50	0.1649	0.56	|Q	|	|	|	|
5+55	0.1688	0.57	|Q	|	|	|	|
6+ 0	0.1728	0.57	|Q	|	|	|	|
6+ 5	0.1768	0.58	|Q	|	|	|	|
6+10	0.1811	0.62	|Q	|	|	|	|
6+15	0.1854	0.63	|Q	|	|	|	|
6+20	0.1898	0.64	|Q	|	|	|	|
6+25	0.1942	0.64	|Q	|	|	|	|
6+30	0.1986	0.64	|Q	|	|	|	|
6+35	0.2031	0.66	|Q	|	|	|	|
6+40	0.2079	0.69	|Q	|	|	|	|
6+45	0.2127	0.70	|Q	|	|	|	|
6+50	0.2176	0.71	|Q	|	|	|	|
6+55	0.2225	0.71	|Q	|	|	|	|
7+ 0	0.2274	0.71	|Q	|	|	|	|
7+ 5	0.2323	0.71	|Q	|	|	|	|

7+10	0.2372	0.71	Q			
7+15	0.2422	0.72	Q			
7+20	0.2472	0.73	Q			
7+25	0.2524	0.76	Q			
7+30	0.2578	0.77	Q			
7+35	0.2632	0.79	Q			
7+40	0.2690	0.83	Q			
7+45	0.2748	0.84	Q			
7+50	0.2807	0.86	Q			
7+55	0.2869	0.90	Q			
8+ 0	0.2932	0.92	Q			
8+ 5	0.3003	1.03	Q			
8+10	0.3094	1.32	Q			
8+15	0.3193	1.44	Q			
8+20	0.3298	1.52	VQ			
8+25	0.3407	1.58	VQ			
8+30	0.3520	1.64	VQ			
8+35	0.3645	1.82	VQ			
8+40	0.3797	2.21	V Q			
8+45	0.3961	2.37	V Q			
8+50	0.4140	2.60	V Q			
8+55	0.4348	3.02	V Q			
9+ 0	0.4567	3.19	V Q			
9+ 5	0.4813	3.56	V Q			
9+10	0.5111	4.33	V Q			
9+15	0.5429	4.62	V Q			
9+20	0.5767	4.91	V Q			
9+25	0.6136	5.36	V Q			
9+30	0.6519	5.56	V Q			
9+35	0.6919	5.81	V Q			
9+40	0.7349	6.24	V Q			
9+45	0.7791	6.42	V Q			
9+50	0.8250	6.66	V Q			
9+55	0.8738	7.08	V Q			
10+ 0	0.9238	7.26	V Q			
10+ 5	0.9681	6.44	V Q			
10+10	0.9964	4.10	V Q			
10+15	1.0195	3.36	Q			
10+20	1.0406	3.06	QV			
10+25	1.0606	2.90	Q V			
10+30	1.0799	2.81	Q V			
10+35	1.1035	3.43	QV			
10+40	1.1389	5.14	V Q			
10+45	1.1782	5.71	V Q			
10+50	1.2196	6.01	V Q			
10+55	1.2623	6.20	V Q			
11+ 0	1.3059	6.33	V Q			
11+ 5	1.3492	6.29	V Q			
11+10	1.3907	6.03	V Q			
11+15	1.4319	5.97	V Q			
11+20	1.4729	5.96	V Q			
11+25	1.5141	5.97	VQ			
11+30	1.5553	5.99	VQ			
11+35	1.5949	5.75	VQ			
11+40	1.6300	5.09	QV			
11+45	1.6637	4.90	Q V			
11+50	1.6979	4.96	Q V			
11+55	1.7343	5.29	QV			
12+ 0	1.7715	5.40	Q V			
12+ 5	1.8155	6.39	Q			
12+10	1.8764	8.85	V Q			
12+15	1.9432	9.70	V Q			
12+20	2.0137	10.24	V Q			



17+40	5.7908	0.36	Q	|	|	|	V|
17+45	5.7933	0.36	Q	|	|	|	V|
17+50	5.7957	0.34	Q	|	|	|	V|
17+55	5.7978	0.31	Q	|	|	|	V|
18+ 0	5.7999	0.30	Q	|	|	|	V|
18+ 5	5.8019	0.29	Q	|	|	|	V|
18+10	5.8039	0.29	Q	|	|	|	V|
18+15	5.8059	0.29	Q	|	|	|	V|
18+20	5.8079	0.29	Q	|	|	|	V|
18+25	5.8098	0.29	Q	|	|	|	V|
18+30	5.8118	0.29	Q	|	|	|	V|
18+35	5.8137	0.27	Q	|	|	|	V|
18+40	5.8153	0.24	Q	|	|	|	V|
18+45	5.8169	0.23	Q	|	|	|	V|
18+50	5.8183	0.21	Q	|	|	|	V|
18+55	5.8195	0.17	Q	|	|	|	V|
19+ 0	5.8206	0.16	Q	|	|	|	V|
19+ 5	5.8217	0.16	Q	|	|	|	V|
19+10	5.8231	0.20	Q	|	|	|	V|
19+15	5.8245	0.20	Q	|	|	|	V|
19+20	5.8260	0.22	Q	|	|	|	V|
19+25	5.8278	0.26	Q	|	|	|	V|
19+30	5.8297	0.27	Q	|	|	|	V|
19+35	5.8315	0.26	Q	|	|	|	V|
19+40	5.8331	0.23	Q	|	|	|	V|
19+45	5.8346	0.22	Q	|	|	|	V|
19+50	5.8361	0.21	Q	|	|	|	V|
19+55	5.8372	0.17	Q	|	|	|	V|
20+ 0	5.8383	0.16	Q	|	|	|	V|
20+ 5	5.8395	0.16	Q	|	|	|	V|
20+10	5.8408	0.20	Q	|	|	|	V|
20+15	5.8422	0.20	Q	|	|	|	V|
20+20	5.8437	0.21	Q	|	|	|	V|
20+25	5.8451	0.21	Q	|	|	|	V|
20+30	5.8466	0.21	Q	|	|	|	V|
20+35	5.8480	0.21	Q	|	|	|	V|
20+40	5.8495	0.21	Q	|	|	|	V|
20+45	5.8510	0.21	Q	|	|	|	V|
20+50	5.8524	0.20	Q	|	|	|	V|
20+55	5.8535	0.17	Q	|	|	|	V|
21+ 0	5.8546	0.16	Q	|	|	|	V|
21+ 5	5.8557	0.16	Q	|	|	|	V|
21+10	5.8571	0.20	Q	|	|	|	V|
21+15	5.8585	0.20	Q	|	|	|	V|
21+20	5.8598	0.20	Q	|	|	|	V|
21+25	5.8609	0.16	Q	|	|	|	V|
21+30	5.8620	0.15	Q	|	|	|	V|
21+35	5.8631	0.16	Q	|	|	|	V|
21+40	5.8645	0.19	Q	|	|	|	V|
21+45	5.8659	0.20	Q	|	|	|	V|
21+50	5.8672	0.20	Q	|	|	|	V|
21+55	5.8683	0.16	Q	|	|	|	V|
22+ 0	5.8694	0.15	Q	|	|	|	V|
22+ 5	5.8705	0.16	Q	|	|	|	V|
22+10	5.8718	0.19	Q	|	|	|	V|
22+15	5.8733	0.20	Q	|	|	|	V|
22+20	5.8746	0.20	Q	|	|	|	V|
22+25	5.8757	0.16	Q	|	|	|	V|
22+30	5.8768	0.15	Q	|	|	|	V|
22+35	5.8778	0.15	Q	|	|	|	V|
22+40	5.8788	0.15	Q	|	|	|	V|
22+45	5.8798	0.15	Q	|	|	|	V|
22+50	5.8808	0.14	Q	|	|	|	V|

22+55	5.8818	0.14	Q	|	|	|	V|
23+ 0	5.8828	0.14	Q	|	|	|	V|
23+ 5	5.8838	0.14	Q	|	|	|	V|
23+10	5.8848	0.14	Q	|	|	|	V|
23+15	5.8857	0.14	Q	|	|	|	V|
23+20	5.8867	0.14	Q	|	|	|	V|
23+25	5.8877	0.14	Q	|	|	|	V|
23+30	5.8887	0.14	Q	|	|	|	V|
23+35	5.8897	0.14	Q	|	|	|	V|
23+40	5.8907	0.14	Q	|	|	|	V|
23+45	5.8917	0.14	Q	|	|	|	V|
23+50	5.8926	0.14	Q	|	|	|	V|
23+55	5.8936	0.14	Q	|	|	|	V|
24+ 0	5.8946	0.14	Q	|	|	|	V|
24+ 5	5.8954	0.12	Q	|	|	|	V|
24+10	5.8957	0.05	Q	|	|	|	V|
24+15	5.8959	0.02	Q	|	|	|	V|
24+20	5.8960	0.01	Q	|	|	|	V|
24+25	5.8961	0.01	Q	|	|	|	V|
24+30	5.8961	0.00	Q	|	|	|	V|
24+35	5.8961	0.00	Q	|	|	|	V|
24+40	5.8961	0.00	Q	|	|	|	V|

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: BUH1006EXIST6100.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "B"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
100 YEAR - 6 HOUR
FN: BUH1006EXIST

Drainage Area = 22.17(Ac.) = 0.035 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 22.17(Ac.) = 0.035 Sq. Mi.
Length along longest watercourse = 1554.00(Ft.)
Length along longest watercourse measured to centroid = 665.00(Ft.)
Length along longest watercourse = 0.294 Mi.
Length along longest watercourse measured to centroid = 0.126 Mi.
Difference in elevation = 68.00(Ft.)
Slope along watercourse = 231.0425 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.085 Hr.
Lag time = 5.12 Min.
25% of lag time = 1.28 Min.
40% of lag time = 2.05 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	1.40	31.04

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	3.00	66.51

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.400(In)
Area Averaged 100-Year Rainfall = 3.000(In)

Point rain (area averaged) = 3.000(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 3.000(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.170	71.00	0.000

Total Area Entered = 22.17(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
71.0	71.0	0.350	0.000	0.350	1.000	0.350
					Sum (F) =	0.350

Area averaged mean soil loss (F) (In/Hr) = 0.350
Minimum soil loss rate ((In/Hr)) = 0.175
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	97.593	18.462	4.125
2	0.167	195.186	48.190	10.767
3	0.250	292.779	16.014	3.578
4	0.333	390.372	7.192	1.607
5	0.417	487.965	4.075	0.911
6	0.500	585.559	2.644	0.591
7	0.583	683.152	1.677	0.375
8	0.667	780.745	1.065	0.238
9	0.750	878.338	0.681	0.152
		Sum = 100.000	Sum=	22.343

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.180	(0.350)	0.162	0.018
2	0.17	0.60	0.216	(0.350)	0.194	0.022
3	0.25	0.60	0.216	(0.350)	0.194	0.022
4	0.33	0.60	0.216	(0.350)	0.194	0.022
5	0.42	0.60	0.216	(0.350)	0.194	0.022
6	0.50	0.70	0.252	(0.350)	0.227	0.025
7	0.58	0.70	0.252	(0.350)	0.227	0.025
8	0.67	0.70	0.252	(0.350)	0.227	0.025
9	0.75	0.70	0.252	(0.350)	0.227	0.025
10	0.83	0.70	0.252	(0.350)	0.227	0.025
11	0.92	0.70	0.252	(0.350)	0.227	0.025
12	1.00	0.80	0.288	(0.350)	0.259	0.029
13	1.08	0.80	0.288	(0.350)	0.259	0.029
14	1.17	0.80	0.288	(0.350)	0.259	0.029
15	1.25	0.80	0.288	(0.350)	0.259	0.029
16	1.33	0.80	0.288	(0.350)	0.259	0.029

17	1.42	0.80	0.288	(	0.350)	0.259		0.029
18	1.50	0.80	0.288	(	0.350)	0.259		0.029
19	1.58	0.80	0.288	(	0.350)	0.259		0.029
20	1.67	0.80	0.288	(	0.350)	0.259		0.029
21	1.75	0.80	0.288	(	0.350)	0.259		0.029
22	1.83	0.80	0.288	(	0.350)	0.259		0.029
23	1.92	0.80	0.288	(	0.350)	0.259		0.029
24	2.00	0.90	0.324	(	0.350)	0.292		0.032
25	2.08	0.80	0.288	(	0.350)	0.259		0.029
26	2.17	0.90	0.324	(	0.350)	0.292		0.032
27	2.25	0.90	0.324	(	0.350)	0.292		0.032
28	2.33	0.90	0.324	(	0.350)	0.292		0.032
29	2.42	0.90	0.324	(	0.350)	0.292		0.032
30	2.50	0.90	0.324	(	0.350)	0.292		0.032
31	2.58	0.90	0.324	(	0.350)	0.292		0.032
32	2.67	0.90	0.324	(	0.350)	0.292		0.032
33	2.75	1.00	0.360	(	0.350)	0.324		0.036
34	2.83	1.00	0.360	(	0.350)	0.324		0.036
35	2.92	1.00	0.360	(	0.350)	0.324		0.036
36	3.00	1.00	0.360	(	0.350)	0.324		0.036
37	3.08	1.00	0.360	(	0.350)	0.324		0.036
38	3.17	1.10	0.396		0.350	(	0.356)	0.046
39	3.25	1.10	0.396		0.350	(	0.356)	0.046
40	3.33	1.10	0.396		0.350	(	0.356)	0.046
41	3.42	1.20	0.432		0.350	(	0.389)	0.082
42	3.50	1.30	0.468		0.350	(	0.421)	0.118
43	3.58	1.40	0.504		0.350	(	0.454)	0.154
44	3.67	1.40	0.504		0.350	(	0.454)	0.154
45	3.75	1.50	0.540		0.350	(	0.486)	0.190
46	3.83	1.50	0.540		0.350	(	0.486)	0.190
47	3.92	1.60	0.576		0.350	(	0.518)	0.226
48	4.00	1.60	0.576		0.350	(	0.518)	0.226
49	4.08	1.70	0.612		0.350	(	0.551)	0.262
50	4.17	1.80	0.648		0.350	(	0.583)	0.298
51	4.25	1.90	0.684		0.350	(	0.616)	0.334
52	4.33	2.00	0.720		0.350	(	0.648)	0.370
53	4.42	2.10	0.756		0.350	(	0.680)	0.406
54	4.50	2.10	0.756		0.350	(	0.680)	0.406
55	4.58	2.20	0.792		0.350	(	0.713)	0.442
56	4.67	2.30	0.828		0.350	(	0.745)	0.478
57	4.75	2.40	0.864		0.350	(	0.778)	0.514
58	4.83	2.40	0.864		0.350	(	0.778)	0.514
59	4.92	2.50	0.900		0.350	(	0.810)	0.550
60	5.00	2.60	0.936		0.350	(	0.842)	0.586
61	5.08	3.10	1.116		0.350	(	1.004)	0.766
62	5.17	3.60	1.296		0.350	(	1.166)	0.946
63	5.25	3.90	1.404		0.350	(	1.264)	1.054
64	5.33	4.20	1.512		0.350	(	1.361)	1.162
65	5.42	4.70	1.692		0.350	(	1.523)	1.342
66	5.50	5.60	2.016		0.350	(	1.814)	1.666
67	5.58	1.90	0.684		0.350	(	0.616)	0.334
68	5.67	0.90	0.324	(	0.350)	0.292		0.032
69	5.75	0.60	0.216	(	0.350)	0.194		0.022
70	5.83	0.50	0.180	(	0.350)	0.162		0.018
71	5.92	0.30	0.108	(	0.350)	0.097		0.011
72	6.00	0.20	0.072	(	0.350)	0.065		0.007

(Loss Rate Not Used)

Sum = 100.0 Sum = 15.1

Flood volume = Effective rainfall 1.25(In)
times area 22.2(Ac.)/[(In)/(Ft.)] = 2.3(Ac.Ft)
Total soil loss = 1.74(In)
Total soil loss = 3.224(Ac.Ft)
Total rainfall = 3.00(In)

Flood volume = 100993.7 Cubic Feet
Total soil loss = 140419.2 Cubic Feet

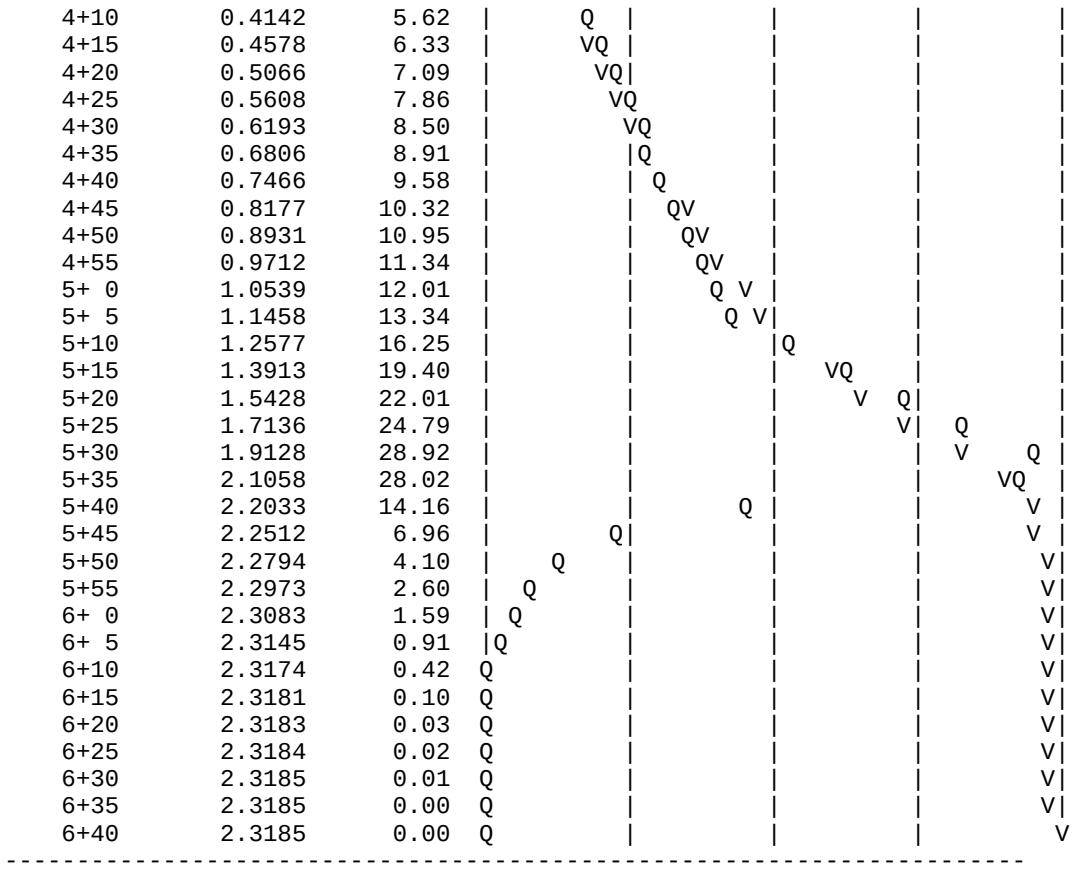
Peak flow rate of this hydrograph = 28.923(CFS)

++

6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0005	0.07	Q				
0+10	0.0025	0.28	Q				
0+15	0.0051	0.39	Q				
0+20	0.0081	0.43	Q				
0+25	0.0112	0.45	Q				
0+30	0.0145	0.48	Q				
0+35	0.0181	0.53	Q				
0+40	0.0219	0.55	Q				
0+45	0.0257	0.55	Q				
0+50	0.0295	0.56	Q				
0+55	0.0334	0.56	Q				
1+ 0	0.0373	0.58	Q				
1+ 5	0.0416	0.62	Q				
1+10	0.0459	0.63	Q				
1+15	0.0503	0.64	Q				
1+20	0.0547	0.64	Q				
1+25	0.0591	0.64	QV				
1+30	0.0635	0.64	QV				
1+35	0.0680	0.64	QV				
1+40	0.0724	0.64	QV				
1+45	0.0768	0.64	QV				
1+50	0.0813	0.64	QV				
1+55	0.0857	0.64	QV				
2+ 0	0.0902	0.66	QV				
2+ 5	0.0949	0.68	QV				
2+10	0.0996	0.67	QV				
2+15	0.1044	0.70	QV				
2+20	0.1093	0.71	QV				
2+25	0.1143	0.72	QV				
2+30	0.1192	0.72	Q V				
2+35	0.1242	0.72	Q V				
2+40	0.1292	0.72	Q V				
2+45	0.1343	0.74	Q V				
2+50	0.1396	0.78	|QV				
2+55	0.1451	0.79	|QV				
3+ 0	0.1506	0.80	|QV				
3+ 5	0.1561	0.80	|QV				
3+10	0.1619	0.84	|QV				
3+15	0.1684	0.95	|QV				
3+20	0.1752	0.98	|Q V				
3+25	0.1831	1.15	|Q V				
3+30	0.1948	1.69	| QV				
3+35	0.2111	2.37	| Q				
3+40	0.2314	2.94	| Q				
3+45	0.2542	3.31	| Q				
3+50	0.2805	3.82	| VQ				
3+55	0.3091	4.16	| Q				
4+ 0	0.3411	4.65	| VQ				
4+ 5	0.3755	4.99	| Q				


4+10 0.4142 5.62
4+15 0.4578 6.33
4+20 0.5066 7.09
4+25 0.5608 7.86
4+30 0.6193 8.50
4+35 0.6806 8.91
4+40 0.7466 9.58
4+45 0.8177 10.32
4+50 0.8931 10.95
4+55 0.9712 11.34
5+ 0 1.0539 12.01
5+ 5 1.1458 13.34
5+10 1.2577 16.25
5+15 1.3913 19.40
5+20 1.5428 22.01
5+25 1.7136 24.79
5+30 1.9128 28.92
5+35 2.1058 28.02
5+40 2.2033 14.16
5+45 2.2512 6.96
5+50 2.2794 4.10
5+55 2.2973 2.60
6+ 0 2.3083 1.59
6+ 5 2.3145 0.91
6+10 2.3174 0.42
6+15 2.3181 0.10
6+20 2.3183 0.03
6+25 2.3184 0.02
6+30 2.3185 0.01
6+35 2.3185 0.00
6+40 2.3185 0.00

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: BUH1003EXIST3100.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "B"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
100 YEAR - 3 HOUR
FN: BUH1003EXIST

Drainage Area = 22.17(Ac.) = 0.035 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 22.17(Ac.) = 0.035 Sq. Mi.
Length along longest watercourse = 1554.00(Ft.)
Length along longest watercourse measured to centroid = 665.00(Ft.)
Length along longest watercourse = 0.294 Mi.
Length along longest watercourse measured to centroid = 0.126 Mi.
Difference in elevation = 68.00(Ft.)
Slope along watercourse = 231.0425 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.085 Hr.
Lag time = 5.12 Min.
25% of lag time = 1.28 Min.
40% of lag time = 2.05 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	1.00	22.17

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	2.40	53.21

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.000(In)
Area Averaged 100-Year Rainfall = 2.400(In)

Point rain (area averaged) = 2.400(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 2.400(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.170	71.00	0.000

Total Area Entered = 22.17(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
71.0	71.0	0.350	0.000	0.350	1.000	0.350
					Sum (F) =	0.350

Area averaged mean soil loss (F) (In/Hr) = 0.350
Minimum soil loss rate ((In/Hr)) = 0.175
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

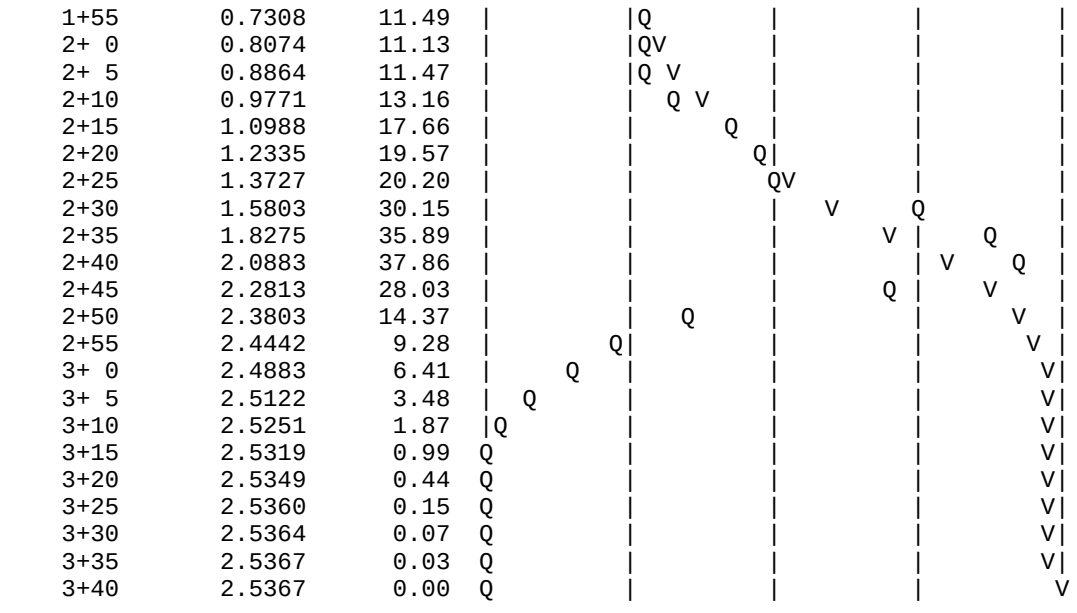
Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	97.593	18.462	4.125
2	0.167	195.186	48.190	10.767
3	0.250	292.779	16.014	3.578
4	0.333	390.372	7.192	1.607
5	0.417	487.965	4.075	0.911
6	0.500	585.559	2.644	0.591
7	0.583	683.152	1.677	0.375
8	0.667	780.745	1.065	0.238
9	0.750	878.338	0.681	0.152
		Sum = 100.000	Sum=	22.343

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.374	(0.350)	0.337	0.037
2	0.17	1.30	0.374	(0.350)	0.337	0.037
3	0.25	1.10	0.317	(0.350)	0.285	0.032
4	0.33	1.50	0.432	0.350	(0.389)	0.082
5	0.42	1.50	0.432	0.350	(0.389)	0.082
6	0.50	1.80	0.518	0.350	(0.467)	0.168
7	0.58	1.50	0.432	0.350	(0.389)	0.082
8	0.67	1.80	0.518	0.350	(0.467)	0.168
9	0.75	1.80	0.518	0.350	(0.467)	0.168
10	0.83	1.50	0.432	0.350	(0.389)	0.082
11	0.92	1.60	0.461	0.350	(0.415)	0.111
12	1.00	1.80	0.518	0.350	(0.467)	0.168
13	1.08	2.20	0.634	0.350	(0.570)	0.283
14	1.17	2.20	0.634	0.350	(0.570)	0.283
15	1.25	2.20	0.634	0.350	(0.570)	0.283
16	1.33	2.00	0.576	0.350	(0.518)	0.226

```
17   1.42     2.60      0.749          0.350    (  0.674)        0.399
18   1.50     2.70      0.778          0.350    (  0.700)        0.427
19   1.58     2.40      0.691          0.350    (  0.622)        0.341
20   1.67     2.70      0.778          0.350    (  0.700)        0.427
21   1.75     3.30      0.950          0.350    (  0.855)        0.600
22   1.83     3.10      0.893          0.350    (  0.803)        0.543
23   1.92     2.90      0.835          0.350    (  0.752)        0.485
24   2.00     3.00      0.864          0.350    (  0.778)        0.514
25   2.08     3.10      0.893          0.350    (  0.803)        0.543
26   2.17     4.20      1.209          0.350    (  1.089)        0.859
27   2.25     5.00      1.440          0.350    (  1.296)        1.090
28   2.33     3.50      1.008          0.350    (  0.907)        0.658
29   2.42     6.80      1.958          0.350    (  1.762)        1.608
30   2.50     7.30      2.102          0.350    (  1.892)        1.752
31   2.58     8.20      2.361          0.350    (  2.125)        2.011
32   2.67     5.90      1.699          0.350    (  1.529)        1.349
33   2.75     2.00      0.576          0.350    (  0.518)        0.226
34   2.83     1.80      0.518          0.350    (  0.467)        0.168
35   2.92     1.80      0.518          0.350    (  0.467)        0.168
36   3.00     0.60      0.173       (  0.350)       0.156        0.017
          (Loss Rate Not Used)
   Sum =     100.0                                    Sum =    16.5
    Flood volume = Effective rainfall      1.37(In)
     times area      22.2(Ac.)/[(In)/(Ft.)] =       2.5(Ac.Ft)
    Total soil loss =      1.03(In)
    Total soil loss =     1.897(Ac.Ft)
    Total rainfall =      2.40(In)
    Flood volume =      110497.4 Cubic Feet
    Total soil loss =       82628.9 Cubic Feet
    ---------------------------------------------------------------------
     Peak flow rate of this hydrograph =     37.863(CFS)
    ---------------------------------------------------------------------
    +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                      3 - H O U R    S T O R M
                  R u n o f f      H y d r o g r a p h
    ---------------------------------------------------------------------
               Hydrograph in   5   Minute intervals ((CFS))

    ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       10.0      20.0      30.0      40.0
-------------------------------------------------------------------------
  0+ 5       0.0011      0.15  Q         |         |         |         |
  0+10       0.0049      0.56  Q         |         |         |         |
  0+15       0.0095      0.67  Q         |         |         |         |
  0+20       0.0155      0.87  Q         |         |         |         |
  0+25       0.0253      1.43  VQ        |         |         |         |
  0+30       0.0389      1.97  VQ        |         |         |         |
  0+35       0.0571      2.64  V Q       |         |         |         |
  0+40       0.0738      2.42  |VQ       |         |         |         |
  0+45       0.0960      3.22  |V Q      |         |         |         |
  0+50       0.1175      3.13  |V Q      |         |         |         |
  0+55       0.1343      2.44  | Q       |         |         |         |
  1+ 0       0.1532      2.74  | Q       |         |         |         |
  1+ 5       0.1797      3.84  | VQ      |         |         |         |
  1+10       0.2161      5.28  |  V Q    |         |         |         |
  1+15       0.2558      5.77  |   VQ    |         |         |         |
  1+20       0.2955      5.77  |   VQ    |         |         |         |
  1+25       0.3368      5.99  |    Q    |         |         |         |
  1+30       0.3908      7.85  |     VQ  |         |         |         |
  1+35       0.4486      8.39  |      VQ |         |         |         |
  1+40       0.5049      8.18  |      VQ |         |         |         |
  1+45       0.5718      9.70  |        Q|         |         |         |
  1+50       0.6517     11.60  |         VQ        |         |         |
```



1+55	0.7308	11.49	
2+ 0	0.8074	11.13	
2+ 5	0.8864	11.47	
2+10	0.9771	13.16	
2+15	1.0988	17.66	
2+20	1.2335	19.57	
2+25	1.3727	20.20	
2+30	1.5803	30.15	
2+35	1.8275	35.89	
2+40	2.0883	37.86	
2+45	2.2813	28.03	
2+50	2.3803	14.37	
2+55	2.4442	9.28	
3+ 0	2.4883	6.41	
3+ 5	2.5122	3.48	
3+10	2.5251	1.87	
3+15	2.5319	0.99	
3+20	2.5349	0.44	
3+25	2.5360	0.15	
3+30	2.5364	0.07	
3+35	2.5367	0.03	
3+40	2.5367	0.00	

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: BUH1001EXIST1100.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "B"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
100 YEAR - 1 HOUR
FN: BUH1001EXIST

Drainage Area = 22.17(Ac.) = 0.035 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 22.17(Ac.) = 0.035 Sq. Mi.
Length along longest watercourse = 1554.00(Ft.)
Length along longest watercourse measured to centroid = 665.00(Ft.)
Length along longest watercourse = 0.294 Mi.
Length along longest watercourse measured to centroid = 0.126 Mi.
Difference in elevation = 68.00(Ft.)
Slope along watercourse = 231.0425 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.085 Hr.
Lag time = 5.12 Min.
25% of lag time = 1.28 Min.
40% of lag time = 2.05 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	0.55	12.19

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	1.36	30.15

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.550(In)
Area Averaged 100-Year Rainfall = 1.360(In)

Point rain (area averaged) = 1.360(In)
Areal adjustment factor = 99.98 %
Adjusted average point rain = 1.360(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.170	71.00	0.000

Total Area Entered = 22.17(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
71.0	71.0	0.350	0.000	0.350	1.000	0.350
					Sum (F) =	0.350

Area averaged mean soil loss (F) (In/Hr) = 0.350
Minimum soil loss rate ((In/Hr)) = 0.175
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.4800

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	97.593	18.462	4.125
2	0.167	195.186	48.190	10.767
3	0.250	292.779	16.014	3.578
4	0.333	390.372	7.192	1.607
5	0.417	487.965	4.075	0.911
6	0.500	585.559	2.644	0.591
7	0.583	683.152	1.677	0.375
8	0.667	780.745	1.065	0.238
9	0.750	878.338	0.681	0.152
		Sum = 100.000	Sum=	22.343

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	4.40	0.718	0.350	(0.646)	0.368
2	0.17	4.50	0.734	0.350	(0.661)	0.384
3	0.25	5.40	0.881	0.350	(0.793)	0.531
4	0.33	5.40	0.881	0.350	(0.793)	0.531
5	0.42	5.70	0.930	0.350	(0.837)	0.580
6	0.50	6.40	1.044	0.350	(0.940)	0.694
7	0.58	7.90	1.289	0.350	(1.160)	0.939
8	0.67	9.10	1.485	0.350	(1.336)	1.135
9	0.75	12.80	2.089	0.350	(1.880)	1.738
10	0.83	25.60	4.177	0.350	(3.759)	3.827
11	0.92	7.90	1.289	0.350	(1.160)	0.939
12	1.00	4.90	0.800	0.350	(0.720)	0.449
	(Loss Rate Not Used)					
Sum =	100.0			Sum =	12.1	

```
      Flood volume = Effective rainfall      1.01(In)
       times area      22.2(Ac.)/[(In)/(Ft.)] =       1.9(Ac.Ft)
      Total soil loss =      0.35(In)
      Total soil loss =     0.647(Ac.Ft)
      Total rainfall =      1.36(In)
      Flood volume =       81243.8 Cubic Feet
      Total soil loss =       28183.1 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =     54.838(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                           1 - H O U R    S T O R M
                      R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
  Time(h+m) Volume Ac.Ft   Q(CFS)  0       15.0      30.0      45.0      60.0
   ---------------------------------------------------------------------
     0+ 5       0.0105      1.52  VQ        |         |         |         |
     0+10       0.0487      5.55  |V Q      |         |         |         |
     0+15       0.1013      7.64  | V  Q    |         |         |         |
     0+20       0.1693      9.88  |  V  Q   |         |         |         |
     0+25       0.2448     10.97  |    V Q  |         |         |         |
     0+30       0.3305     12.43  |      VQ |         |         |         |
     0+35       0.4347     15.13  |        VQ         |         |         |
     0+40       0.5672     19.24  |         | Q       |         |         |
     0+45       0.7398     25.06  |         |    VQ   |         |         |
     0+50       1.0253     41.45  |         |         |V     Q  |         |
     0+55       1.4029     54.84  |         |         |        V     Q    |
     1+ 0       1.6132     30.53  |         |        Q         |   V     |
     1+ 5       1.7318     17.21  |         |Q        |         |      V  |
     1+10       1.7895      8.39  |    Q    |         |         |       V |
     1+15       1.8233      4.90  |  Q      |         |         |        V|
     1+20       1.8438      2.99  |Q        |         |         |        V|
     1+25       1.8562      1.79  |Q        |         |         |        V|
     1+30       1.8629      0.97  Q         |         |         |        V|
     1+35       1.8646      0.25  Q         |         |         |        V|
     1+40       1.8651      0.07  Q         |         |         |         V
  ---------------------------------------------------------------------
```

APPENDIX G.2: AREA “B” – EXISTING CONDITION HYDROGRAPH CALCULATIONS 10–YEAR

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: BUH1024EXIST2410.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "B"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
10 YEAR - 24 HOUR
FN: BUH1024EXIST

Drainage Area = 22.17(Ac.) = 0.035 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 22.17(Ac.) = 0.035 Sq. Mi.
Length along longest watercourse = 1554.00(Ft.)
Length along longest watercourse measured to centroid = 665.00(Ft.)
Length along longest watercourse = 0.294 Mi.
Length along longest watercourse measured to centroid = 0.126 Mi.
Difference in elevation = 68.00(Ft.)
Slope along watercourse = 231.0425 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.085 Hr.
Lag time = 5.12 Min.
25% of lag time = 1.28 Min.
40% of lag time = 2.05 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	2.50	55.43

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	8.00	177.36

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 2.500(In)
Area Averaged 100-Year Rainfall = 8.000(In)

Point rain (area averaged) = 4.763(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 4.763(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.170	71.00	0.000

Total Area Entered = 22.17(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
71.0	71.0	0.350	0.000	0.350	1.000	0.350
					Sum (F) =	0.350

Area averaged mean soil loss (F) (In/Hr) = 0.350
Minimum soil loss rate ((In/Hr)) = 0.175
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	97.593	18.462	4.125
2	0.167	195.186	48.190	10.767
3	0.250	292.779	16.014	3.578
4	0.333	390.372	7.192	1.607
5	0.417	487.965	4.075	0.911
6	0.500	585.559	2.644	0.591
7	0.583	683.152	1.677	0.375
8	0.667	780.745	1.065	0.238
9	0.750	878.338	0.681	0.152
		Sum = 100.000	Sum=	22.343

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.038	(0.621)	0.034	0.004
2	0.17	0.07	0.038	(0.618)	0.034	0.004
3	0.25	0.07	0.038	(0.616)	0.034	0.004
4	0.33	0.10	0.057	(0.614)	0.051	0.006
5	0.42	0.10	0.057	(0.611)	0.051	0.006
6	0.50	0.10	0.057	(0.609)	0.051	0.006
7	0.58	0.10	0.057	(0.606)	0.051	0.006
8	0.67	0.10	0.057	(0.604)	0.051	0.006
9	0.75	0.10	0.057	(0.602)	0.051	0.006
10	0.83	0.13	0.076	(0.599)	0.069	0.008
11	0.92	0.13	0.076	(0.597)	0.069	0.008
12	1.00	0.13	0.076	(0.595)	0.069	0.008
13	1.08	0.10	0.057	(0.592)	0.051	0.006
14	1.17	0.10	0.057	(0.590)	0.051	0.006
15	1.25	0.10	0.057	(0.588)	0.051	0.006
16	1.33	0.10	0.057	(0.585)	0.051	0.006

17	1.42	0.10	0.057	(0.583)	0.051	0.006
18	1.50	0.10	0.057	(0.581)	0.051	0.006
19	1.58	0.10	0.057	(0.578)	0.051	0.006
20	1.67	0.10	0.057	(0.576)	0.051	0.006
21	1.75	0.10	0.057	(0.574)	0.051	0.006
22	1.83	0.13	0.076	(0.571)	0.069	0.008
23	1.92	0.13	0.076	(0.569)	0.069	0.008
24	2.00	0.13	0.076	(0.567)	0.069	0.008
25	2.08	0.13	0.076	(0.564)	0.069	0.008
26	2.17	0.13	0.076	(0.562)	0.069	0.008
27	2.25	0.13	0.076	(0.560)	0.069	0.008
28	2.33	0.13	0.076	(0.558)	0.069	0.008
29	2.42	0.13	0.076	(0.555)	0.069	0.008
30	2.50	0.13	0.076	(0.553)	0.069	0.008
31	2.58	0.17	0.095	(0.551)	0.086	0.010
32	2.67	0.17	0.095	(0.549)	0.086	0.010
33	2.75	0.17	0.095	(0.546)	0.086	0.010
34	2.83	0.17	0.095	(0.544)	0.086	0.010
35	2.92	0.17	0.095	(0.542)	0.086	0.010
36	3.00	0.17	0.095	(0.540)	0.086	0.010
37	3.08	0.17	0.095	(0.537)	0.086	0.010
38	3.17	0.17	0.095	(0.535)	0.086	0.010
39	3.25	0.17	0.095	(0.533)	0.086	0.010
40	3.33	0.17	0.095	(0.531)	0.086	0.010
41	3.42	0.17	0.095	(0.528)	0.086	0.010
42	3.50	0.17	0.095	(0.526)	0.086	0.010
43	3.58	0.17	0.095	(0.524)	0.086	0.010
44	3.67	0.17	0.095	(0.522)	0.086	0.010
45	3.75	0.17	0.095	(0.520)	0.086	0.010
46	3.83	0.20	0.114	(0.517)	0.103	0.011
47	3.92	0.20	0.114	(0.515)	0.103	0.011
48	4.00	0.20	0.114	(0.513)	0.103	0.011
49	4.08	0.20	0.114	(0.511)	0.103	0.011
50	4.17	0.20	0.114	(0.509)	0.103	0.011
51	4.25	0.20	0.114	(0.507)	0.103	0.011
52	4.33	0.23	0.133	(0.504)	0.120	0.013
53	4.42	0.23	0.133	(0.502)	0.120	0.013
54	4.50	0.23	0.133	(0.500)	0.120	0.013
55	4.58	0.23	0.133	(0.498)	0.120	0.013
56	4.67	0.23	0.133	(0.496)	0.120	0.013
57	4.75	0.23	0.133	(0.494)	0.120	0.013
58	4.83	0.27	0.152	(0.492)	0.137	0.015
59	4.92	0.27	0.152	(0.489)	0.137	0.015
60	5.00	0.27	0.152	(0.487)	0.137	0.015
61	5.08	0.20	0.114	(0.485)	0.103	0.011
62	5.17	0.20	0.114	(0.483)	0.103	0.011
63	5.25	0.20	0.114	(0.481)	0.103	0.011
64	5.33	0.23	0.133	(0.479)	0.120	0.013
65	5.42	0.23	0.133	(0.477)	0.120	0.013
66	5.50	0.23	0.133	(0.475)	0.120	0.013
67	5.58	0.27	0.152	(0.473)	0.137	0.015
68	5.67	0.27	0.152	(0.471)	0.137	0.015
69	5.75	0.27	0.152	(0.468)	0.137	0.015
70	5.83	0.27	0.152	(0.466)	0.137	0.015
71	5.92	0.27	0.152	(0.464)	0.137	0.015
72	6.00	0.27	0.152	(0.462)	0.137	0.015
73	6.08	0.30	0.171	(0.460)	0.154	0.017
74	6.17	0.30	0.171	(0.458)	0.154	0.017
75	6.25	0.30	0.171	(0.456)	0.154	0.017
76	6.33	0.30	0.171	(0.454)	0.154	0.017
77	6.42	0.30	0.171	(0.452)	0.154	0.017
78	6.50	0.30	0.171	(0.450)	0.154	0.017
79	6.58	0.33	0.191	(0.448)	0.171	0.019

80	6.67	0.33	0.191	(0.446)	0.171	0.019
81	6.75	0.33	0.191	(0.444)	0.171	0.019
82	6.83	0.33	0.191	(0.442)	0.171	0.019
83	6.92	0.33	0.191	(0.440)	0.171	0.019
84	7.00	0.33	0.191	(0.438)	0.171	0.019
85	7.08	0.33	0.191	(0.436)	0.171	0.019
86	7.17	0.33	0.191	(0.434)	0.171	0.019
87	7.25	0.33	0.191	(0.432)	0.171	0.019
88	7.33	0.37	0.210	(0.430)	0.189	0.021
89	7.42	0.37	0.210	(0.428)	0.189	0.021
90	7.50	0.37	0.210	(0.426)	0.189	0.021
91	7.58	0.40	0.229	(0.424)	0.206	0.023
92	7.67	0.40	0.229	(0.422)	0.206	0.023
93	7.75	0.40	0.229	(0.420)	0.206	0.023
94	7.83	0.43	0.248	(0.418)	0.223	0.025
95	7.92	0.43	0.248	(0.416)	0.223	0.025
96	8.00	0.43	0.248	(0.414)	0.223	0.025
97	8.08	0.50	0.286	(0.413)	0.257	0.029
98	8.17	0.50	0.286	(0.411)	0.257	0.029
99	8.25	0.50	0.286	(0.409)	0.257	0.029
100	8.33	0.50	0.286	(0.407)	0.257	0.029
101	8.42	0.50	0.286	(0.405)	0.257	0.029
102	8.50	0.50	0.286	(0.403)	0.257	0.029
103	8.58	0.53	0.305	(0.401)	0.274	0.030
104	8.67	0.53	0.305	(0.399)	0.274	0.030
105	8.75	0.53	0.305	(0.397)	0.274	0.030
106	8.83	0.57	0.324	(0.395)	0.291	0.032
107	8.92	0.57	0.324	(0.394)	0.291	0.032
108	9.00	0.57	0.324	(0.392)	0.291	0.032
109	9.08	0.63	0.362	(0.390)	0.326	0.036
110	9.17	0.63	0.362	(0.388)	0.326	0.036
111	9.25	0.63	0.362	(0.386)	0.326	0.036
112	9.33	0.67	0.381	(0.384)	0.343	0.038
113	9.42	0.67	0.381	(0.382)	0.343	0.038
114	9.50	0.67	0.381	(0.381)	0.343	0.038
115	9.58	0.70	0.400	(0.379)	0.360	0.040
116	9.67	0.70	0.400	(0.377)	0.360	0.040
117	9.75	0.70	0.400	(0.375)	0.360	0.040
118	9.83	0.73	0.419	0.373	(0.377)	0.046
119	9.92	0.73	0.419	0.372	(0.377)	0.047
120	10.00	0.73	0.419	0.370	(0.377)	0.049
121	10.08	0.50	0.286	(0.368)	0.257	0.029
122	10.17	0.50	0.286	(0.366)	0.257	0.029
123	10.25	0.50	0.286	(0.364)	0.257	0.029
124	10.33	0.50	0.286	(0.363)	0.257	0.029
125	10.42	0.50	0.286	(0.361)	0.257	0.029
126	10.50	0.50	0.286	(0.359)	0.257	0.029
127	10.58	0.67	0.381	(0.357)	0.343	0.038
128	10.67	0.67	0.381	(0.356)	0.343	0.038
129	10.75	0.67	0.381	(0.354)	0.343	0.038
130	10.83	0.67	0.381	(0.352)	0.343	0.038
131	10.92	0.67	0.381	(0.350)	0.343	0.038
132	11.00	0.67	0.381	(0.349)	0.343	0.038
133	11.08	0.63	0.362	(0.347)	0.326	0.036
134	11.17	0.63	0.362	(0.345)	0.326	0.036
135	11.25	0.63	0.362	(0.344)	0.326	0.036
136	11.33	0.63	0.362	(0.342)	0.326	0.036
137	11.42	0.63	0.362	(0.340)	0.326	0.036
138	11.50	0.63	0.362	(0.339)	0.326	0.036
139	11.58	0.57	0.324	(0.337)	0.291	0.032
140	11.67	0.57	0.324	(0.335)	0.291	0.032
141	11.75	0.57	0.324	(0.334)	0.291	0.032
142	11.83	0.60	0.343	(0.332)	0.309	0.034

143	11.92	0.60	0.343	(	0.330)	0.309	0.034
144	12.00	0.60	0.343	(	0.329)	0.309	0.034
145	12.08	0.83	0.476		0.327	(0.429)	0.149
146	12.17	0.83	0.476		0.325	(0.429)	0.151
147	12.25	0.83	0.476		0.324	(0.429)	0.153
148	12.33	0.87	0.495		0.322	(0.446)	0.173
149	12.42	0.87	0.495		0.320	(0.446)	0.175
150	12.50	0.87	0.495		0.319	(0.446)	0.177
151	12.58	0.93	0.533		0.317	(0.480)	0.216
152	12.67	0.93	0.533		0.316	(0.480)	0.218
153	12.75	0.93	0.533		0.314	(0.480)	0.219
154	12.83	0.97	0.552		0.312	(0.497)	0.240
155	12.92	0.97	0.552		0.311	(0.497)	0.242
156	13.00	0.97	0.552		0.309	(0.497)	0.243
157	13.08	1.13	0.648		0.308	(0.583)	0.340
158	13.17	1.13	0.648		0.306	(0.583)	0.342
159	13.25	1.13	0.648		0.305	(0.583)	0.343
160	13.33	1.13	0.648		0.303	(0.583)	0.345
161	13.42	1.13	0.648		0.301	(0.583)	0.346
162	13.50	1.13	0.648		0.300	(0.583)	0.348
163	13.58	0.77	0.438		0.298	(0.394)	0.140
164	13.67	0.77	0.438		0.297	(0.394)	0.141
165	13.75	0.77	0.438		0.295	(0.394)	0.143
166	13.83	0.77	0.438		0.294	(0.394)	0.144
167	13.92	0.77	0.438		0.292	(0.394)	0.146
168	14.00	0.77	0.438		0.291	(0.394)	0.147
169	14.08	0.90	0.514		0.289	(0.463)	0.225
170	14.17	0.90	0.514		0.288	(0.463)	0.226
171	14.25	0.90	0.514		0.286	(0.463)	0.228
172	14.33	0.87	0.495		0.285	(0.446)	0.210
173	14.42	0.87	0.495		0.284	(0.446)	0.212
174	14.50	0.87	0.495		0.282	(0.446)	0.213
175	14.58	0.87	0.495		0.281	(0.446)	0.215
176	14.67	0.87	0.495		0.279	(0.446)	0.216
177	14.75	0.87	0.495		0.278	(0.446)	0.218
178	14.83	0.83	0.476		0.276	(0.429)	0.200
179	14.92	0.83	0.476		0.275	(0.429)	0.201
180	15.00	0.83	0.476		0.274	(0.429)	0.203
181	15.08	0.80	0.457		0.272	(0.411)	0.185
182	15.17	0.80	0.457		0.271	(0.411)	0.186
183	15.25	0.80	0.457		0.269	(0.411)	0.188
184	15.33	0.77	0.438		0.268	(0.394)	0.170
185	15.42	0.77	0.438		0.267	(0.394)	0.172
186	15.50	0.77	0.438		0.265	(0.394)	0.173
187	15.58	0.63	0.362		0.264	(0.326)	0.098
188	15.67	0.63	0.362		0.263	(0.326)	0.099
189	15.75	0.63	0.362		0.261	(0.326)	0.101
190	15.83	0.63	0.362		0.260	(0.326)	0.102
191	15.92	0.63	0.362		0.258	(0.326)	0.103
192	16.00	0.63	0.362		0.257	(0.326)	0.105
193	16.08	0.13	0.076	(	0.256)	0.069	0.008
194	16.17	0.13	0.076	(	0.255)	0.069	0.008
195	16.25	0.13	0.076	(	0.253)	0.069	0.008
196	16.33	0.13	0.076	(	0.252)	0.069	0.008
197	16.42	0.13	0.076	(	0.251)	0.069	0.008
198	16.50	0.13	0.076	(	0.249)	0.069	0.008
199	16.58	0.10	0.057	(	0.248)	0.051	0.006
200	16.67	0.10	0.057	(	0.247)	0.051	0.006
201	16.75	0.10	0.057	(	0.246)	0.051	0.006
202	16.83	0.10	0.057	(	0.244)	0.051	0.006
203	16.92	0.10	0.057	(	0.243)	0.051	0.006
204	17.00	0.10	0.057	(	0.242)	0.051	0.006
205	17.08	0.17	0.095	(	0.241)	0.086	0.010

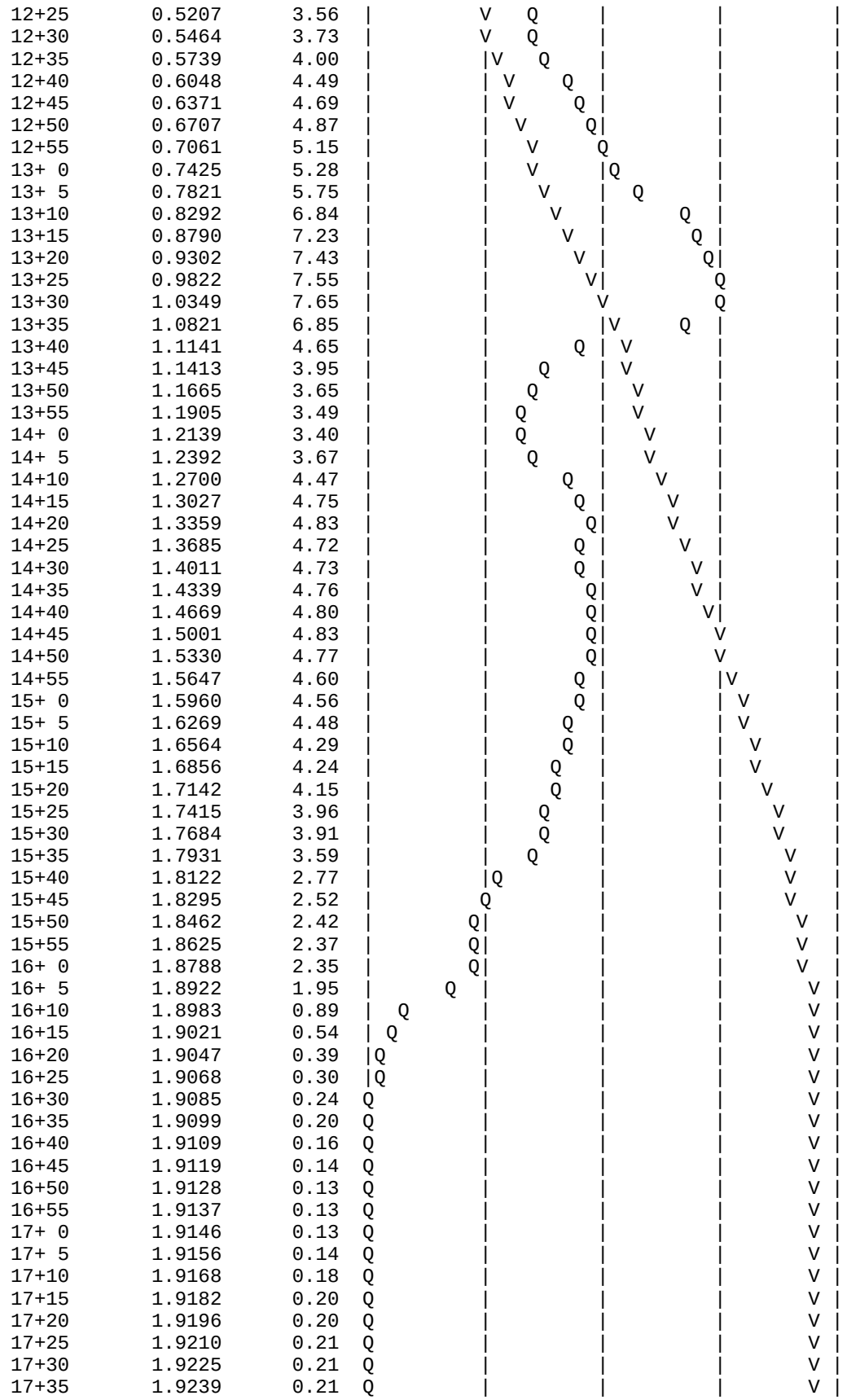
206	17.17	0.17	0.095	(	0.239)	0.086	0.010
207	17.25	0.17	0.095	(	0.238)	0.086	0.010
208	17.33	0.17	0.095	(	0.237)	0.086	0.010
209	17.42	0.17	0.095	(	0.236)	0.086	0.010
210	17.50	0.17	0.095	(	0.235)	0.086	0.010
211	17.58	0.17	0.095	(	0.234)	0.086	0.010
212	17.67	0.17	0.095	(	0.232)	0.086	0.010
213	17.75	0.17	0.095	(	0.231)	0.086	0.010
214	17.83	0.13	0.076	(	0.230)	0.069	0.008
215	17.92	0.13	0.076	(	0.229)	0.069	0.008
216	18.00	0.13	0.076	(	0.228)	0.069	0.008
217	18.08	0.13	0.076	(	0.227)	0.069	0.008
218	18.17	0.13	0.076	(	0.226)	0.069	0.008
219	18.25	0.13	0.076	(	0.224)	0.069	0.008
220	18.33	0.13	0.076	(	0.223)	0.069	0.008
221	18.42	0.13	0.076	(	0.222)	0.069	0.008
222	18.50	0.13	0.076	(	0.221)	0.069	0.008
223	18.58	0.10	0.057	(	0.220)	0.051	0.006
224	18.67	0.10	0.057	(	0.219)	0.051	0.006
225	18.75	0.10	0.057	(	0.218)	0.051	0.006
226	18.83	0.07	0.038	(	0.217)	0.034	0.004
227	18.92	0.07	0.038	(	0.216)	0.034	0.004
228	19.00	0.07	0.038	(	0.215)	0.034	0.004
229	19.08	0.10	0.057	(	0.214)	0.051	0.006
230	19.17	0.10	0.057	(	0.213)	0.051	0.006
231	19.25	0.10	0.057	(	0.212)	0.051	0.006
232	19.33	0.13	0.076	(	0.211)	0.069	0.008
233	19.42	0.13	0.076	(	0.210)	0.069	0.008
234	19.50	0.13	0.076	(	0.209)	0.069	0.008
235	19.58	0.10	0.057	(	0.208)	0.051	0.006
236	19.67	0.10	0.057	(	0.207)	0.051	0.006
237	19.75	0.10	0.057	(	0.206)	0.051	0.006
238	19.83	0.07	0.038	(	0.205)	0.034	0.004
239	19.92	0.07	0.038	(	0.204)	0.034	0.004
240	20.00	0.07	0.038	(	0.203)	0.034	0.004
241	20.08	0.10	0.057	(	0.202)	0.051	0.006
242	20.17	0.10	0.057	(	0.202)	0.051	0.006
243	20.25	0.10	0.057	(	0.201)	0.051	0.006
244	20.33	0.10	0.057	(	0.200)	0.051	0.006
245	20.42	0.10	0.057	(	0.199)	0.051	0.006
246	20.50	0.10	0.057	(	0.198)	0.051	0.006
247	20.58	0.10	0.057	(	0.197)	0.051	0.006
248	20.67	0.10	0.057	(	0.196)	0.051	0.006
249	20.75	0.10	0.057	(	0.196)	0.051	0.006
250	20.83	0.07	0.038	(	0.195)	0.034	0.004
251	20.92	0.07	0.038	(	0.194)	0.034	0.004
252	21.00	0.07	0.038	(	0.193)	0.034	0.004
253	21.08	0.10	0.057	(	0.193)	0.051	0.006
254	21.17	0.10	0.057	(	0.192)	0.051	0.006
255	21.25	0.10	0.057	(	0.191)	0.051	0.006
256	21.33	0.07	0.038	(	0.190)	0.034	0.004
257	21.42	0.07	0.038	(	0.190)	0.034	0.004
258	21.50	0.07	0.038	(	0.189)	0.034	0.004
259	21.58	0.10	0.057	(	0.188)	0.051	0.006
260	21.67	0.10	0.057	(	0.187)	0.051	0.006
261	21.75	0.10	0.057	(	0.187)	0.051	0.006
262	21.83	0.07	0.038	(	0.186)	0.034	0.004
263	21.92	0.07	0.038	(	0.186)	0.034	0.004
264	22.00	0.07	0.038	(	0.185)	0.034	0.004
265	22.08	0.10	0.057	(	0.184)	0.051	0.006
266	22.17	0.10	0.057	(	0.184)	0.051	0.006
267	22.25	0.10	0.057	(	0.183)	0.051	0.006
268	22.33	0.07	0.038	(	0.183)	0.034	0.004

```
269  22.42     0.07      0.038       (  0.182)       0.034        0.004
270  22.50     0.07      0.038       (  0.181)       0.034        0.004
271  22.58     0.07      0.038       (  0.181)       0.034        0.004
272  22.67     0.07      0.038       (  0.180)       0.034        0.004
273  22.75     0.07      0.038       (  0.180)       0.034        0.004
274  22.83     0.07      0.038       (  0.179)       0.034        0.004
275  22.92     0.07      0.038       (  0.179)       0.034        0.004
276  23.00     0.07      0.038       (  0.179)       0.034        0.004
277  23.08     0.07      0.038       (  0.178)       0.034        0.004
278  23.17     0.07      0.038       (  0.178)       0.034        0.004
279  23.25     0.07      0.038       (  0.177)       0.034        0.004
280  23.33     0.07      0.038       (  0.177)       0.034        0.004
281  23.42     0.07      0.038       (  0.177)       0.034        0.004
282  23.50     0.07      0.038       (  0.176)       0.034        0.004
283  23.58     0.07      0.038       (  0.176)       0.034        0.004
284  23.67     0.07      0.038       (  0.176)       0.034        0.004
285  23.75     0.07      0.038       (  0.176)       0.034        0.004
286  23.83     0.07      0.038       (  0.175)       0.034        0.004
287  23.92     0.07      0.038       (  0.175)       0.034        0.004
288  24.00     0.07      0.038       (  0.175)       0.034        0.004
            (Loss Rate Not Used)
    Sum =     100.0                                  Sum =    12.9
     Flood volume = Effective rainfall      1.08(In)
      times area      22.2(Ac.)/[(In)/(Ft.)] =       2.0(Ac.Ft)
     Total soil loss =      3.69(In)
     Total soil loss =     6.811(Ac.Ft)
     Total rainfall =      4.76(In)
     Flood volume =       86600.5 Cubic Feet
     Total soil loss =      296674.7 Cubic Feet
     ---------------------------------------------------------------------
      Peak flow rate of this hydrograph =      7.648(CFS)
     ---------------------------------------------------------------------
     +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
     ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

     ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0001      0.02  Q         |         |         |         |
   0+10       0.0005      0.06  Q         |         |         |         |
   0+15       0.0010      0.07  Q         |         |         |         |
   0+20       0.0016      0.08  Q         |         |         |         |
   0+25       0.0023      0.11  Q         |         |         |         |
   0+30       0.0031      0.12  Q         |         |         |         |
   0+35       0.0040      0.12  Q         |         |         |         |
   0+40       0.0048      0.12  Q         |         |         |         |
   0+45       0.0057      0.13  Q         |         |         |         |
   0+50       0.0066      0.13  Q         |         |         |         |
   0+55       0.0077      0.16  Q         |         |         |         |
   1+ 0       0.0088      0.16  Q         |         |         |         |
   1+ 5       0.0099      0.16  Q         |         |         |         |
   1+10       0.0109      0.14  Q         |         |         |         |
   1+15       0.0118      0.13  Q         |         |         |         |
   1+20       0.0127      0.13  Q         |         |         |         |
   1+25       0.0136      0.13  Q         |         |         |         |
   1+30       0.0145      0.13  Q         |         |         |         |
   1+35       0.0154      0.13  Q         |         |         |         |
   1+40       0.0162      0.13  Q         |         |         |         |
   1+45       0.0171      0.13  Q         |         |         |         |
   1+50       0.0181      0.14  Q         |         |         |         |
```

1+55	0.0191	0.16	Q	|	|	|	|
2+ 0	0.0203	0.16	Q	|	|	|	|
2+ 5	0.0214	0.17	Q	|	|	|	|
2+10	0.0226	0.17	Q	|	|	|	|
2+15	0.0237	0.17	Q	|	|	|	|
2+20	0.0249	0.17	Q	|	|	|	|
2+25	0.0261	0.17	Q	|	|	|	|
2+30	0.0272	0.17	Q	|	|	|	|
2+35	0.0285	0.18	Q	|	|	|	|
2+40	0.0298	0.20	Q	|	|	|	|
2+45	0.0312	0.21	Q	|	|	|	|
2+50	0.0327	0.21	Q	|	|	|	|
2+55	0.0341	0.21	Q	|	|	|	|
3+ 0	0.0356	0.21	Q	|	|	|	|
3+ 5	0.0370	0.21	Q	|	|	|	|
3+10	0.0385	0.21	Q	|	|	|	|
3+15	0.0400	0.21	Q	|	|	|	|
3+20	0.0414	0.21	Q	|	|	|	|
3+25	0.0429	0.21	Q	|	|	|	|
3+30	0.0444	0.21	Q	|	|	|	|
3+35	0.0458	0.21	Q	|	|	|	|
3+40	0.0473	0.21	Q	|	|	|	|
3+45	0.0488	0.21	Q	|	|	|	|
3+50	0.0503	0.22	QV	|	|	|	|
3+55	0.0520	0.24	QV	|	|	|	|
4+ 0	0.0537	0.25	QV	|	|	|	|
4+ 5	0.0554	0.25	|Q	|	|	|	|
4+10	0.0571	0.25	|Q	|	|	|	|
4+15	0.0589	0.25	|Q	|	|	|	|
4+20	0.0607	0.26	|Q	|	|	|	|
4+25	0.0626	0.28	|Q	|	|	|	|
4+30	0.0646	0.29	|Q	|	|	|	|
4+35	0.0667	0.29	|Q	|	|	|	|
4+40	0.0687	0.30	|Q	|	|	|	|
4+45	0.0707	0.30	|Q	|	|	|	|
4+50	0.0729	0.31	|Q	|	|	|	|
4+55	0.0751	0.33	|Q	|	|	|	|
5+ 0	0.0774	0.33	|Q	|	|	|	|
5+ 5	0.0796	0.32	|Q	|	|	|	|
5+10	0.0815	0.28	|Q	|	|	|	|
5+15	0.0834	0.27	|Q	|	|	|	|
5+20	0.0853	0.27	|Q	|	|	|	|
5+25	0.0872	0.29	|Q	|	|	|	|
5+30	0.0893	0.29	|Q	|	|	|	|
5+35	0.0914	0.30	|Q	|	|	|	|
5+40	0.0936	0.32	|Q	|	|	|	|
5+45	0.0959	0.33	|Q	|	|	|	|
5+50	0.0982	0.34	|Q	|	|	|	|
5+55	0.1005	0.34	|QV	|	|	|	|
6+ 0	0.1029	0.34	|QV	|	|	|	|
6+ 5	0.1052	0.35	|QV	|	|	|	|
6+10	0.1078	0.37	|QV	|	|	|	|
6+15	0.1104	0.38	|QV	|	|	|	|
6+20	0.1130	0.38	|QV	|	|	|	|
6+25	0.1156	0.38	|QV	|	|	|	|
6+30	0.1182	0.38	|QV	|	|	|	|
6+35	0.1209	0.39	|QV	|	|	|	|
6+40	0.1238	0.41	|QV	|	|	|	|
6+45	0.1266	0.42	|QV	|	|	|	|
6+50	0.1295	0.42	|QV	|	|	|	|
6+55	0.1325	0.42	|QV	|	|	|	|
7+ 0	0.1354	0.42	|QV	|	|	|	|
7+ 5	0.1383	0.43	|QV	|	|	|	|

7+10	0.1412	0.43	QV			
7+15	0.1442	0.43	QV			
7+20	0.1472	0.43	QV			
7+25	0.1503	0.45	Q V			
7+30	0.1535	0.46	Q V			
7+35	0.1567	0.47	Q V			
7+40	0.1601	0.49	Q V			
7+45	0.1636	0.50	QV			
7+50	0.1671	0.51	QV			
7+55	0.1708	0.54	QV			
8+ 0	0.1746	0.54	QV			
8+ 5	0.1785	0.56	QV			
8+10	0.1826	0.61	QV			
8+15	0.1869	0.62	QV			
8+20	0.1913	0.63	QV			
8+25	0.1956	0.63	QV			
8+30	0.2000	0.64	Q V			
8+35	0.2044	0.65	Q V			
8+40	0.2090	0.67	Q V			
8+45	0.2137	0.67	Q V			
8+50	0.2184	0.68	Q V			
8+55	0.2233	0.71	Q V			
9+ 0	0.2282	0.72	Q V			
9+ 5	0.2332	0.73	Q V			
9+10	0.2386	0.78	QV			
9+15	0.2441	0.79	QV			
9+20	0.2496	0.81	Q V			
9+25	0.2554	0.83	Q V			
9+30	0.2612	0.84	Q V			
9+35	0.2670	0.85	Q V			
9+40	0.2731	0.88	Q V			
9+45	0.2792	0.89	Q V			
9+50	0.2855	0.91	Q V			
9+55	0.2922	0.98	Q V			
10+ 0	0.2993	1.03	Q V			
10+ 5	0.3061	0.98	Q V			
10+10	0.3114	0.77	Q V			
10+15	0.3163	0.71	Q V			
10+20	0.3210	0.68	Q V			
10+25	0.3256	0.66	Q V			
10+30	0.3301	0.65	Q V			
10+35	0.3348	0.69	Q V			
10+40	0.3402	0.78	Q V			
10+45	0.3458	0.81	Q V			
10+50	0.3515	0.83	Q V			
10+55	0.3573	0.84	Q V			
11+ 0	0.3631	0.84	Q V			
11+ 5	0.3689	0.84	Q V			
11+10	0.3746	0.82	Q V			
11+15	0.3802	0.82	Q V			
11+20	0.3858	0.81	Q V			
11+25	0.3914	0.81	Q V			
11+30	0.3970	0.81	Q V			
11+35	0.4024	0.79	Q V			
11+40	0.4076	0.75	Q V			
11+45	0.4127	0.74	Q V			
11+50	0.4178	0.74	Q V			
11+55	0.4230	0.76	Q V			
12+ 0	0.4283	0.76	Q V			
12+ 5	0.4368	1.24	Q V			
12+10	0.4539	2.49	Q			
12+15	0.4740	2.92	V	Q		
12+20	0.4962	3.22	V	Q		



17+40	1.9254	0.21	Q	|	|	|	V |
17+45	1.9269	0.21	Q	|	|	|	V |
17+50	1.9283	0.21	Q	|	|	|	V |
17+55	1.9295	0.18	Q	|	|	|	V |
18+ 0	1.9308	0.18	Q	|	|	|	V |
18+ 5	1.9320	0.17	Q	|	|	|	V |
18+10	1.9332	0.17	Q	|	|	|	V |
18+15	1.9343	0.17	Q	|	|	|	V |
18+20	1.9355	0.17	Q	|	|	|	V |
18+25	1.9367	0.17	Q	|	|	|	V |
18+30	1.9379	0.17	Q	|	|	|	V |
18+35	1.9390	0.16	Q	|	|	|	V|
18+40	1.9400	0.14	Q	|	|	|	V|
18+45	1.9409	0.14	Q	|	|	|	V|
18+50	1.9418	0.12	Q	|	|	|	V|
18+55	1.9425	0.10	Q	|	|	|	V|
19+ 0	1.9431	0.09	Q	|	|	|	V|
19+ 5	1.9438	0.10	Q	|	|	|	V|
19+10	1.9446	0.12	Q	|	|	|	V|
19+15	1.9454	0.12	Q	|	|	|	V|
19+20	1.9463	0.13	Q	|	|	|	V|
19+25	1.9474	0.15	Q	|	|	|	V|
19+30	1.9485	0.16	Q	|	|	|	V|
19+35	1.9496	0.16	Q	|	|	|	V|
19+40	1.9505	0.14	Q	|	|	|	V|
19+45	1.9515	0.13	Q	|	|	|	V|
19+50	1.9523	0.12	Q	|	|	|	V|
19+55	1.9530	0.10	Q	|	|	|	V|
20+ 0	1.9537	0.09	Q	|	|	|	V|
20+ 5	1.9543	0.10	Q	|	|	|	V|
20+10	1.9551	0.12	Q	|	|	|	V|
20+15	1.9560	0.12	Q	|	|	|	V|
20+20	1.9568	0.12	Q	|	|	|	V|
20+25	1.9577	0.13	Q	|	|	|	V|
20+30	1.9586	0.13	Q	|	|	|	V|
20+35	1.9594	0.13	Q	|	|	|	V|
20+40	1.9603	0.13	Q	|	|	|	V|
20+45	1.9612	0.13	Q	|	|	|	V|
20+50	1.9620	0.12	Q	|	|	|	V|
20+55	1.9627	0.10	Q	|	|	|	V|
21+ 0	1.9633	0.09	Q	|	|	|	V|
21+ 5	1.9640	0.10	Q	|	|	|	V|
21+10	1.9648	0.12	Q	|	|	|	V|
21+15	1.9657	0.12	Q	|	|	|	V|
21+20	1.9665	0.12	Q	|	|	|	V|
21+25	1.9671	0.10	Q	|	|	|	V|
21+30	1.9678	0.09	Q	|	|	|	V|
21+35	1.9684	0.10	Q	|	|	|	V|
21+40	1.9692	0.12	Q	|	|	|	V|
21+45	1.9701	0.12	Q	|	|	|	V|
21+50	1.9709	0.12	Q	|	|	|	V|
21+55	1.9715	0.10	Q	|	|	|	V|
22+ 0	1.9722	0.09	Q	|	|	|	V|
22+ 5	1.9728	0.10	Q	|	|	|	V|
22+10	1.9736	0.12	Q	|	|	|	V|
22+15	1.9745	0.12	Q	|	|	|	V|
22+20	1.9753	0.12	Q	|	|	|	V|
22+25	1.9759	0.10	Q	|	|	|	V|
22+30	1.9766	0.09	Q	|	|	|	V|
22+35	1.9772	0.09	Q	|	|	|	V|
22+40	1.9778	0.09	Q	|	|	|	V|
22+45	1.9784	0.09	Q	|	|	|	V|
22+50	1.9790	0.09	Q	|	|	|	V|

22+55	1.9795	0.09	Q	|	|	|	V|
23+ 0	1.9801	0.09	Q	|	|	|	V|
23+ 5	1.9807	0.09	Q	|	|	|	V|
23+10	1.9813	0.09	Q	|	|	|	V|
23+15	1.9819	0.09	Q	|	|	|	V|
23+20	1.9825	0.09	Q	|	|	|	V|
23+25	1.9831	0.09	Q	|	|	|	V|
23+30	1.9837	0.09	Q	|	|	|	V|
23+35	1.9842	0.09	Q	|	|	|	V|
23+40	1.9848	0.09	Q	|	|	|	V|
23+45	1.9854	0.09	Q	|	|	|	V|
23+50	1.9860	0.09	Q	|	|	|	V|
23+55	1.9866	0.09	Q	|	|	|	V|
24+ 0	1.9872	0.09	Q	|	|	|	V|
24+ 5	1.9876	0.07	Q	|	|	|	V|
24+10	1.9878	0.03	Q	|	|	|	V|
24+15	1.9879	0.01	Q	|	|	|	V|
24+20	1.9880	0.01	Q	|	|	|	V|
24+25	1.9880	0.01	Q	|	|	|	V|
24+30	1.9881	0.00	Q	|	|	|	V|
24+35	1.9881	0.00	Q	|	|	|	V|
24+40	1.9881	0.00	Q	|	|	|	V|

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: BUH106EXIST610.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "B"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
10 YEAR - 6 HOUR
FN: BUH106EXIST

Drainage Area = 22.17(Ac.) = 0.035 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 22.17(Ac.) = 0.035 Sq. Mi.
Length along longest watercourse = 1554.00(Ft.)
Length along longest watercourse measured to centroid = 665.00(Ft.)
Length along longest watercourse = 0.294 Mi.
Length along longest watercourse measured to centroid = 0.126 Mi.
Difference in elevation = 68.00(Ft.)
Slope along watercourse = 231.0425 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.085 Hr.
Lag time = 5.12 Min.
25% of lag time = 1.28 Min.
40% of lag time = 2.05 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	1.40	31.04

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	3.00	66.51

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.400(In)
Area Averaged 100-Year Rainfall = 3.000(In)

Point rain (area averaged) = 2.058(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 2.058(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.170	71.00	0.000

Total Area Entered = 22.17(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
71.0	71.0	0.350	0.000	0.350	1.000	0.350
					Sum (F) =	0.350

Area averaged mean soil loss (F) (In/Hr) = 0.350
Minimum soil loss rate ((In/Hr)) = 0.175
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	97.593	18.462	4.125
2	0.167	195.186	48.190	10.767
3	0.250	292.779	16.014	3.578
4	0.333	390.372	7.192	1.607
5	0.417	487.965	4.075	0.911
6	0.500	585.559	2.644	0.591
7	0.583	683.152	1.677	0.375
8	0.667	780.745	1.065	0.238
9	0.750	878.338	0.681	0.152
		Sum = 100.000	Sum=	22.343

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.123	(0.350)	0.111	0.012
2	0.17	0.60	0.148	(0.350)	0.133	0.015
3	0.25	0.60	0.148	(0.350)	0.133	0.015
4	0.33	0.60	0.148	(0.350)	0.133	0.015
5	0.42	0.60	0.148	(0.350)	0.133	0.015
6	0.50	0.70	0.173	(0.350)	0.156	0.017
7	0.58	0.70	0.173	(0.350)	0.156	0.017
8	0.67	0.70	0.173	(0.350)	0.156	0.017
9	0.75	0.70	0.173	(0.350)	0.156	0.017
10	0.83	0.70	0.173	(0.350)	0.156	0.017
11	0.92	0.70	0.173	(0.350)	0.156	0.017
12	1.00	0.80	0.198	(0.350)	0.178	0.020
13	1.08	0.80	0.198	(0.350)	0.178	0.020
14	1.17	0.80	0.198	(0.350)	0.178	0.020
15	1.25	0.80	0.198	(0.350)	0.178	0.020
16	1.33	0.80	0.198	(0.350)	0.178	0.020

17	1.42	0.80	0.198	(0.350)	0.178	0.020
18	1.50	0.80	0.198	(0.350)	0.178	0.020
19	1.58	0.80	0.198	(0.350)	0.178	0.020
20	1.67	0.80	0.198	(0.350)	0.178	0.020
21	1.75	0.80	0.198	(0.350)	0.178	0.020
22	1.83	0.80	0.198	(0.350)	0.178	0.020
23	1.92	0.80	0.198	(0.350)	0.178	0.020
24	2.00	0.90	0.222	(0.350)	0.200	0.022
25	2.08	0.80	0.198	(0.350)	0.178	0.020
26	2.17	0.90	0.222	(0.350)	0.200	0.022
27	2.25	0.90	0.222	(0.350)	0.200	0.022
28	2.33	0.90	0.222	(0.350)	0.200	0.022
29	2.42	0.90	0.222	(0.350)	0.200	0.022
30	2.50	0.90	0.222	(0.350)	0.200	0.022
31	2.58	0.90	0.222	(0.350)	0.200	0.022
32	2.67	0.90	0.222	(0.350)	0.200	0.022
33	2.75	1.00	0.247	(0.350)	0.222	0.025
34	2.83	1.00	0.247	(0.350)	0.222	0.025
35	2.92	1.00	0.247	(0.350)	0.222	0.025
36	3.00	1.00	0.247	(0.350)	0.222	0.025
37	3.08	1.00	0.247	(0.350)	0.222	0.025
38	3.17	1.10	0.272	(0.350)	0.245	0.027
39	3.25	1.10	0.272	(0.350)	0.245	0.027
40	3.33	1.10	0.272	(0.350)	0.245	0.027
41	3.42	1.20	0.296	(0.350)	0.267	0.030
42	3.50	1.30	0.321	(0.350)	0.289	0.032
43	3.58	1.40	0.346	(0.350)	0.311	0.035
44	3.67	1.40	0.346	(0.350)	0.311	0.035
45	3.75	1.50	0.370	(0.350)	0.333	0.037
46	3.83	1.50	0.370	(0.350)	0.333	0.037
47	3.92	1.60	0.395	0.350	(0.356)	0.045
48	4.00	1.60	0.395	0.350	(0.356)	0.045
49	4.08	1.70	0.420	0.350	(0.378)	0.070
50	4.17	1.80	0.445	0.350	(0.400)	0.094
51	4.25	1.90	0.469	0.350	(0.422)	0.119
52	4.33	2.00	0.494	0.350	(0.445)	0.144
53	4.42	2.10	0.519	0.350	(0.467)	0.168
54	4.50	2.10	0.519	0.350	(0.467)	0.168
55	4.58	2.20	0.543	0.350	(0.489)	0.193
56	4.67	2.30	0.568	0.350	(0.511)	0.218
57	4.75	2.40	0.593	0.350	(0.533)	0.243
58	4.83	2.40	0.593	0.350	(0.533)	0.243
59	4.92	2.50	0.617	0.350	(0.556)	0.267
60	5.00	2.60	0.642	0.350	(0.578)	0.292
61	5.08	3.10	0.766	0.350	(0.689)	0.415
62	5.17	3.60	0.889	0.350	(0.800)	0.539
63	5.25	3.90	0.963	0.350	(0.867)	0.613
64	5.33	4.20	1.037	0.350	(0.934)	0.687
65	5.42	4.70	1.161	0.350	(1.045)	0.811
66	5.50	5.60	1.383	0.350	(1.245)	1.033
67	5.58	1.90	0.469	0.350	(0.422)	0.119
68	5.67	0.90	0.222	(0.350)	0.200	0.022
69	5.75	0.60	0.148	(0.350)	0.133	0.015
70	5.83	0.50	0.123	(0.350)	0.111	0.012
71	5.92	0.30	0.074	(0.350)	0.067	0.007
72	6.00	0.20	0.049	(0.350)	0.044	0.005

(Loss Rate Not Used)

Sum = 100.0 Sum = 7.6

Flood volume = Effective rainfall 0.63(In)
times area 22.2(Ac.)/[(In)/(Ft.)] = 1.2(Ac.Ft)
Total soil loss = 1.42(In)
Total soil loss = 2.631(Ac.Ft)
Total rainfall = 2.06(In)

Flood volume = 51018.0 Cubic Feet
Total soil loss = 114611.6 Cubic Feet

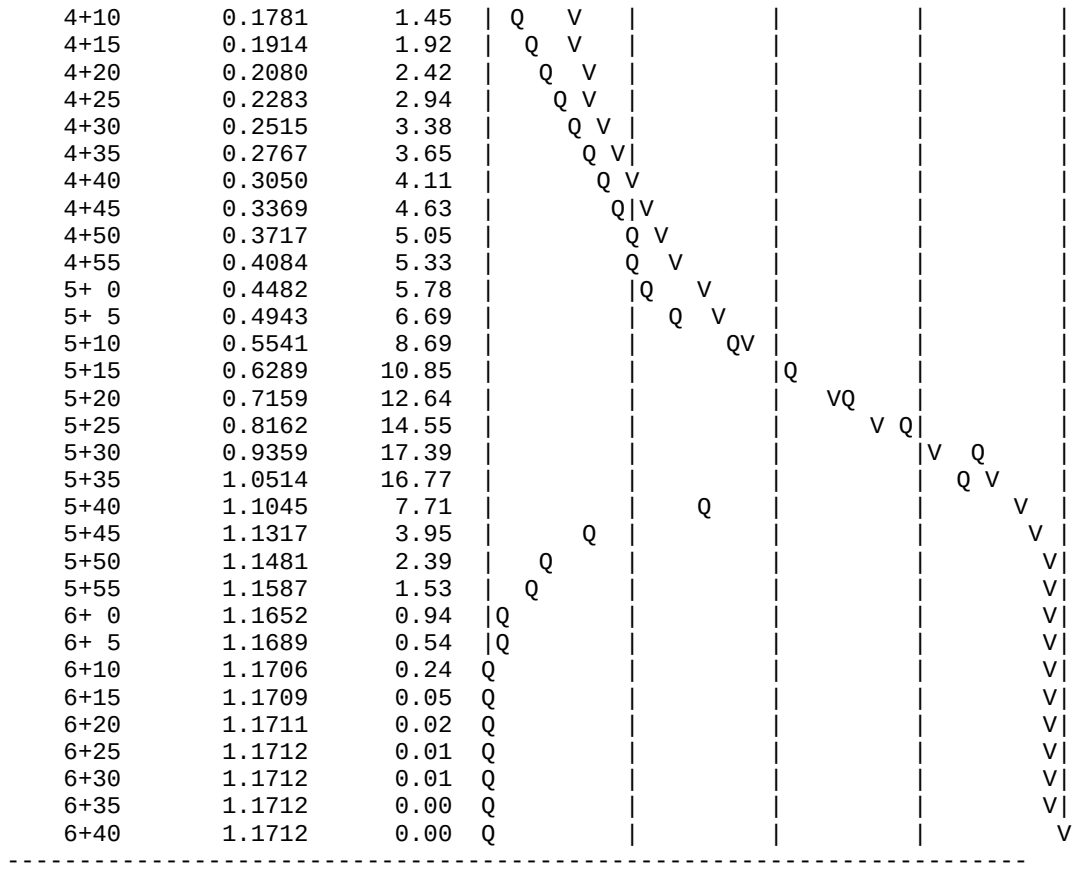
Peak flow rate of this hydrograph = 17.386(CFS)

++

6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0004	0.05	Q				
0+10	0.0017	0.19	Q				
0+15	0.0035	0.26	Q				
0+20	0.0055	0.29	Q				
0+25	0.0077	0.31	Q				
0+30	0.0099	0.33	Q				
0+35	0.0124	0.36	Q				
0+40	0.0150	0.37	Q				
0+45	0.0176	0.38	Q				
0+50	0.0203	0.38	Q				
0+55	0.0229	0.38	Q				
1+ 0	0.0256	0.40	Q				
1+ 5	0.0285	0.42	Q				
1+10	0.0315	0.43	QV				
1+15	0.0345	0.44	QV				
1+20	0.0375	0.44	QV				
1+25	0.0406	0.44	QV				
1+30	0.0436	0.44	QV				
1+35	0.0466	0.44	QV				
1+40	0.0497	0.44	QV				
1+45	0.0527	0.44	QV				
1+50	0.0558	0.44	QV				
1+55	0.0588	0.44	Q V				
2+ 0	0.0619	0.45	Q V				
2+ 5	0.0651	0.47	Q V				
2+10	0.0683	0.46	Q V				
2+15	0.0716	0.48	Q V				
2+20	0.0750	0.49	Q V				
2+25	0.0784	0.49	Q V				
2+30	0.0818	0.49	Q V				
2+35	0.0852	0.50	Q V				
2+40	0.0886	0.50	Q V				
2+45	0.0921	0.51	|Q V				
2+50	0.0958	0.53	|Q V				
2+55	0.0995	0.54	|Q V				
3+ 0	0.1033	0.55	|Q V				
3+ 5	0.1071	0.55	|Q V				
3+10	0.1109	0.56	|Q V				
3+15	0.1150	0.59	|Q V				
3+20	0.1191	0.60	|Q V				
3+25	0.1233	0.61	|Q V				
3+30	0.1278	0.65	|Q V				
3+35	0.1326	0.70	|Q V				
3+40	0.1377	0.74	|Q V				
3+45	0.1430	0.76	|Q V				
3+50	0.1485	0.80	|Q V				
3+55	0.1543	0.85	|Q V				
4+ 0	0.1607	0.94	|Q V				
4+ 5	0.1681	1.07	| Q V				


4+10 0.1781 1.45
4+15 0.1914 1.92
4+20 0.2080 2.42
4+25 0.2283 2.94
4+30 0.2515 3.38
4+35 0.2767 3.65
4+40 0.3050 4.11
4+45 0.3369 4.63
4+50 0.3717 5.05
4+55 0.4084 5.33
5+ 0 0.4482 5.78
5+ 5 0.4943 6.69
5+10 0.5541 8.69
5+15 0.6289 10.85
5+20 0.7159 12.64
5+25 0.8162 14.55
5+30 0.9359 17.39
5+35 1.0514 16.77
5+40 1.1045 7.71
5+45 1.1317 3.95
5+50 1.1481 2.39
5+55 1.1587 1.53
6+ 0 1.1652 0.94
6+ 5 1.1689 0.54
6+10 1.1706 0.24
6+15 1.1709 0.05
6+20 1.1711 0.02
6+25 1.1712 0.01
6+30 1.1712 0.01
6+35 1.1712 0.00
6+40 1.1712 0.00

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: BUH103EXIST310.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "B"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
10 YEAR - 3 HOUR
FN: BUH103EXIST

Drainage Area = 22.17(Ac.) = 0.035 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 22.17(Ac.) = 0.035 Sq. Mi.
Length along longest watercourse = 1554.00(Ft.)
Length along longest watercourse measured to centroid = 665.00(Ft.)
Length along longest watercourse = 0.294 Mi.
Length along longest watercourse measured to centroid = 0.126 Mi.
Difference in elevation = 68.00(Ft.)
Slope along watercourse = 231.0425 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.085 Hr.
Lag time = 5.12 Min.
25% of lag time = 1.28 Min.
40% of lag time = 2.05 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	1.00	22.17

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	2.40	53.21

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.000(In)
Area Averaged 100-Year Rainfall = 2.400(In)

Point rain (area averaged) = 1.576(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.576(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.170	71.00	0.000

Total Area Entered = 22.17(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
71.0	71.0	0.350	0.000	0.350	1.000	0.350
					Sum (F) =	0.350

Area averaged mean soil loss (F) (In/Hr) = 0.350
Minimum soil loss rate ((In/Hr)) = 0.175
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

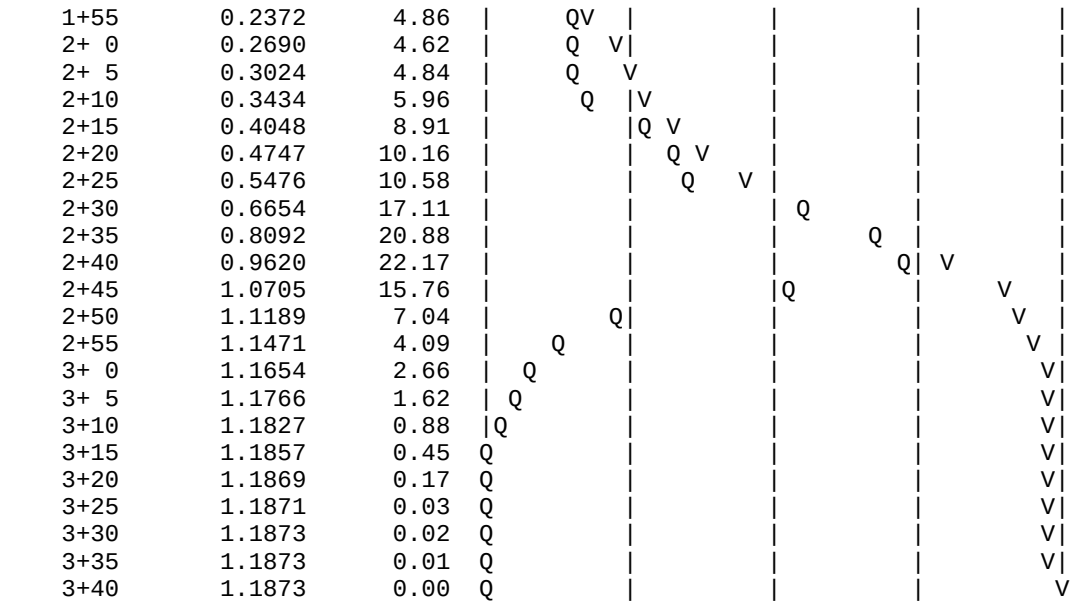
Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	97.593	18.462	4.125
2	0.167	195.186	48.190	10.767
3	0.250	292.779	16.014	3.578
4	0.333	390.372	7.192	1.607
5	0.417	487.965	4.075	0.911
6	0.500	585.559	2.644	0.591
7	0.583	683.152	1.677	0.375
8	0.667	780.745	1.065	0.238
9	0.750	878.338	0.681	0.152
		Sum = 100.000	Sum=	22.343

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.246	(0.350)	0.221	0.025
2	0.17	1.30	0.246	(0.350)	0.221	0.025
3	0.25	1.10	0.208	(0.350)	0.187	0.021
4	0.33	1.50	0.284	(0.350)	0.255	0.028
5	0.42	1.50	0.284	(0.350)	0.255	0.028
6	0.50	1.80	0.340	(0.350)	0.306	0.034
7	0.58	1.50	0.284	(0.350)	0.255	0.028
8	0.67	1.80	0.340	(0.350)	0.306	0.034
9	0.75	1.80	0.340	(0.350)	0.306	0.034
10	0.83	1.50	0.284	(0.350)	0.255	0.028
11	0.92	1.60	0.303	(0.350)	0.272	0.030
12	1.00	1.80	0.340	(0.350)	0.306	0.034
13	1.08	2.20	0.416	0.350	(0.374)	0.066
14	1.17	2.20	0.416	0.350	(0.374)	0.066
15	1.25	2.20	0.416	0.350	(0.374)	0.066
16	1.33	2.00	0.378	(0.350)	0.340	0.038

```
17   1.42     2.60      0.492          0.350    (  0.442)        0.141
18   1.50     2.70      0.511          0.350    (  0.460)        0.160
19   1.58     2.40      0.454          0.350    (  0.408)        0.104
20   1.67     2.70      0.511          0.350    (  0.460)        0.160
21   1.75     3.30      0.624          0.350    (  0.562)        0.274
22   1.83     3.10      0.586          0.350    (  0.528)        0.236
23   1.92     2.90      0.548          0.350    (  0.494)        0.198
24   2.00     3.00      0.567          0.350    (  0.511)        0.217
25   2.08     3.10      0.586          0.350    (  0.528)        0.236
26   2.17     4.20      0.794          0.350    (  0.715)        0.444
27   2.25     5.00      0.945          0.350    (  0.851)        0.595
28   2.33     3.50      0.662          0.350    (  0.596)        0.312
29   2.42     6.80      1.286          0.350    (  1.157)        0.936
30   2.50     7.30      1.380          0.350    (  1.242)        1.030
31   2.58     8.20      1.551          0.350    (  1.396)        1.200
32   2.67     5.90      1.116          0.350    (  1.004)        0.765
33   2.75     2.00      0.378       (  0.350)       0.340        0.038
34   2.83     1.80      0.340       (  0.350)       0.306        0.034
35   2.92     1.80      0.340       (  0.350)       0.306        0.034
36   3.00     0.60      0.113       (  0.350)       0.102        0.011
           (Loss Rate Not Used)
   Sum =     100.0                                    Sum =     7.7
    Flood volume = Effective rainfall      0.64(In)
     times area      22.2(Ac.)/[(In)/(Ft.)] =       1.2(Ac.Ft)
    Total soil loss =      0.93(In)
    Total soil loss =     1.724(Ac.Ft)
    Total rainfall =      1.58(In)
    Flood volume =       51719.9 Cubic Feet
    Total soil loss =       75097.4 Cubic Feet
    ---------------------------------------------------------------------
     Peak flow rate of this hydrograph =     22.175(CFS)
    ---------------------------------------------------------------------
    +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                      3 - H O U R    S T O R M
                  R u n o f f      H y d r o g r a p h
    ---------------------------------------------------------------------
               Hydrograph in   5   Minute intervals ((CFS))

    ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
-------------------------------------------------------------------------
  0+ 5       0.0007      0.10  Q         |         |         |         |
  0+10       0.0032      0.37  Q         |         |         |         |
  0+15       0.0062      0.44  Q         |         |         |         |
  0+20       0.0095      0.47  Q         |         |         |         |
  0+25       0.0133      0.56  Q         |         |         |         |
  0+30       0.0176      0.62  Q         |         |         |         |
  0+35       0.0222      0.67  Q         |         |         |         |
  0+40       0.0268      0.67  Q         |         |         |         |
  0+45       0.0318      0.72  QV        |         |         |         |
  0+50       0.0367      0.72  QV        |         |         |         |
  0+55       0.0414      0.67  QV        |         |         |         |
  1+ 0       0.0462      0.69  QV        |         |         |         |
  1+ 5       0.0521      0.87  |Q        |         |         |         |
  1+10       0.0605      1.22  |QV       |         |         |         |
  1+15       0.0698      1.34  |QV       |         |         |         |
  1+20       0.0786      1.28  |QV       |         |         |         |
  1+25       0.0885      1.44  |QV       |         |         |         |
  1+30       0.1060      2.55  |  Q      |         |         |         |
  1+35       0.1257      2.86  |  QV     |         |         |         |
  1+40       0.1443      2.70  |  QV     |         |         |         |
  1+45       0.1697      3.69  |   QV    |         |         |         |
  1+50       0.2037      4.93  |     Q   |         |         |         |
```


1+55 0.2372 4.86
2+ 0 0.2690 4.62
2+ 5 0.3024 4.84
2+10 0.3434 5.96
2+15 0.4048 8.91
2+20 0.4747 10.16
2+25 0.5476 10.58
2+30 0.6654 17.11
2+35 0.8092 20.88
2+40 0.9620 22.17
2+45 1.0705 15.76
2+50 1.1189 7.04
2+55 1.1471 4.09
3+ 0 1.1654 2.66
3+ 5 1.1766 1.62
3+10 1.1827 0.88
3+15 1.1857 0.45
3+20 1.1869 0.17
3+25 1.1871 0.03
3+30 1.1873 0.02
3+35 1.1873 0.01
3+40 1.1873 0.00

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: BUH101EXIST110.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "B"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
10 YEAR - 1 HOUR
FN: BUH101EXIST

Drainage Area = 22.17(Ac.) = 0.035 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 22.17(Ac.) = 0.035 Sq. Mi.
Length along longest watercourse = 1554.00(Ft.)
Length along longest watercourse measured to centroid = 665.00(Ft.)
Length along longest watercourse = 0.294 Mi.
Length along longest watercourse measured to centroid = 0.126 Mi.
Difference in elevation = 68.00(Ft.)
Slope along watercourse = 231.0425 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.085 Hr.
Lag time = 5.12 Min.
25% of lag time = 1.28 Min.
40% of lag time = 2.05 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	0.55	12.19

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	1.36	30.15

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.550(In)
Area Averaged 100-Year Rainfall = 1.360(In)

Point rain (area averaged) = 0.883(In)
Areal adjustment factor = 99.98 %
Adjusted average point rain = 0.883(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.170	71.00	0.000

Total Area Entered = 22.17(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
71.0	71.0	0.350	0.000	0.350	1.000	0.350
					Sum (F) =	0.350

Area averaged mean soil loss (F) (In/Hr) = 0.350
Minimum soil loss rate ((In/Hr)) = 0.175
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.4800

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	97.593	18.462	4.125
2	0.167	195.186	48.190	10.767
3	0.250	292.779	16.014	3.578
4	0.333	390.372	7.192	1.607
5	0.417	487.965	4.075	0.911
6	0.500	585.559	2.644	0.591
7	0.583	683.152	1.677	0.375
8	0.667	780.745	1.065	0.238
9	0.750	878.338	0.681	0.152
		Sum = 100.000	Sum=	22.343

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	4.40	0.466	0.350	(0.420)	0.116
2	0.17	4.50	0.477	0.350	(0.429)	0.127
3	0.25	5.40	0.572	0.350	(0.515)	0.222
4	0.33	5.40	0.572	0.350	(0.515)	0.222
5	0.42	5.70	0.604	0.350	(0.544)	0.254
6	0.50	6.40	0.678	0.350	(0.610)	0.328
7	0.58	7.90	0.837	0.350	(0.753)	0.487
8	0.67	9.10	0.964	0.350	(0.868)	0.614
9	0.75	12.80	1.356	0.350	(1.221)	1.006
10	0.83	25.60	2.713	0.350	(2.441)	2.363
11	0.92	7.90	0.837	0.350	(0.753)	0.487
12	1.00	4.90	0.519	0.350	(0.467)	0.169
	(Loss Rate Not Used)					
Sum =	100.0			Sum =	6.4	

```
      Flood volume = Effective rainfall      0.53(In)
       times area      22.2(Ac.)/[(In)/(Ft.)] =       1.0(Ac.Ft)
      Total soil loss =      0.35(In)
      Total soil loss =     0.647(Ac.Ft)
      Total rainfall =      0.88(In)
      Flood volume =       42883.3 Cubic Feet
      Total soil loss =       28183.1 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =     32.870(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                           1 - H O U R    S T O R M
                      R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
  Time(h+m) Volume Ac.Ft   Q(CFS)  0       10.0      20.0      30.0      40.0
   ---------------------------------------------------------------------
     0+ 5       0.0033      0.48  Q         |         |         |         |
     0+10       0.0155      1.77  VQ        |         |         |         |
     0+15       0.0341      2.70  |VQ       |         |         |         |
     0+20       0.0613      3.95  | VQ      |         |         |         |
     0+25       0.0926      4.54  |  VQ     |         |         |         |
     0+30       0.1299      5.42  |    Q    |         |         |         |
     0+35       0.1790      7.13  |      Q  |         |         |         |
     0+40       0.2463      9.77  |        QV         |         |         |
     0+45       0.3395     13.53  |          |  Q     |         |         |
     0+50       0.5060     24.18  |          |         V   Q     |         |
     0+55       0.7324     32.87  |          |         |        V| Q       |
     1+ 0       0.8500     17.08  |          |      Q  |         |   V     |
     1+ 5       0.9116      8.94  |       Q  |         |         |      V  |
     1+10       0.9428      4.53  |   Q      |         |         |       V |
     1+15       0.9615      2.71  | Q        |         |         |        V|
     1+20       0.9729      1.66  |Q         |         |         |        V|
     1+25       0.9798      1.00  Q          |         |         |        V|
     1+30       0.9835      0.54  Q          |         |         |        V|
     1+35       0.9843      0.11  Q          |         |         |        V|
     1+40       0.9845      0.03  Q          |         |         |         V
  ---------------------------------------------------------------------
```

APPENDIX G.3: AREA “B” – EXISTING CONDITION HYDROGRAPH CALCULATIONS 5–YEAR

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: BUH524EXIST245.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "B"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
5 YEAR - 24 HOUR
FN: BUH524EXIST

Drainage Area = 22.17(Ac.) = 0.035 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 22.17(Ac.) = 0.035 Sq. Mi.
Length along longest watercourse = 1554.00(Ft.)
Length along longest watercourse measured to centroid = 665.00(Ft.)
Length along longest watercourse = 0.294 Mi.
Length along longest watercourse measured to centroid = 0.126 Mi.
Difference in elevation = 68.00(Ft.)
Slope along watercourse = 231.0425 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.085 Hr.
Lag time = 5.12 Min.
25% of lag time = 1.28 Min.
40% of lag time = 2.05 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	2.50	55.43

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	8.00	177.36

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 2.500(In)
Area Averaged 100-Year Rainfall = 8.000(In)

Point rain (area averaged) = 3.788(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 3.788(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.170	71.00	0.000

Total Area Entered = 22.17(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
71.0	52.2	0.550	0.000	0.550	1.000	0.550
					Sum (F) =	0.550

Area averaged mean soil loss (F) (In/Hr) = 0.550
Minimum soil loss rate ((In/Hr)) = 0.275
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	97.593	18.462	4.125
2	0.167	195.186	48.190	10.767
3	0.250	292.779	16.014	3.578
4	0.333	390.372	7.192	1.607
5	0.417	487.965	4.075	0.911
6	0.500	585.559	2.644	0.591
7	0.583	683.152	1.677	0.375
8	0.667	780.745	1.065	0.238
9	0.750	878.338	0.681	0.152
		Sum = 100.000	Sum=	22.343

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.030	(0.974)	0.027	0.003
2	0.17	0.07	0.030	(0.970)	0.027	0.003
3	0.25	0.07	0.030	(0.967)	0.027	0.003
4	0.33	0.10	0.045	(0.963)	0.041	0.005
5	0.42	0.10	0.045	(0.959)	0.041	0.005
6	0.50	0.10	0.045	(0.955)	0.041	0.005
7	0.58	0.10	0.045	(0.952)	0.041	0.005
8	0.67	0.10	0.045	(0.948)	0.041	0.005
9	0.75	0.10	0.045	(0.944)	0.041	0.005
10	0.83	0.13	0.061	(0.941)	0.055	0.006
11	0.92	0.13	0.061	(0.937)	0.055	0.006
12	1.00	0.13	0.061	(0.933)	0.055	0.006
13	1.08	0.10	0.045	(0.929)	0.041	0.005
14	1.17	0.10	0.045	(0.926)	0.041	0.005
15	1.25	0.10	0.045	(0.922)	0.041	0.005
16	1.33	0.10	0.045	(0.918)	0.041	0.005

17	1.42	0.10	0.045	(0.915)	0.041	0.005
18	1.50	0.10	0.045	(0.911)	0.041	0.005
19	1.58	0.10	0.045	(0.908)	0.041	0.005
20	1.67	0.10	0.045	(0.904)	0.041	0.005
21	1.75	0.10	0.045	(0.900)	0.041	0.005
22	1.83	0.13	0.061	(0.897)	0.055	0.006
23	1.92	0.13	0.061	(0.893)	0.055	0.006
24	2.00	0.13	0.061	(0.889)	0.055	0.006
25	2.08	0.13	0.061	(0.886)	0.055	0.006
26	2.17	0.13	0.061	(0.882)	0.055	0.006
27	2.25	0.13	0.061	(0.879)	0.055	0.006
28	2.33	0.13	0.061	(0.875)	0.055	0.006
29	2.42	0.13	0.061	(0.872)	0.055	0.006
30	2.50	0.13	0.061	(0.868)	0.055	0.006
31	2.58	0.17	0.076	(0.864)	0.068	0.008
32	2.67	0.17	0.076	(0.861)	0.068	0.008
33	2.75	0.17	0.076	(0.857)	0.068	0.008
34	2.83	0.17	0.076	(0.854)	0.068	0.008
35	2.92	0.17	0.076	(0.850)	0.068	0.008
36	3.00	0.17	0.076	(0.847)	0.068	0.008
37	3.08	0.17	0.076	(0.843)	0.068	0.008
38	3.17	0.17	0.076	(0.840)	0.068	0.008
39	3.25	0.17	0.076	(0.836)	0.068	0.008
40	3.33	0.17	0.076	(0.833)	0.068	0.008
41	3.42	0.17	0.076	(0.829)	0.068	0.008
42	3.50	0.17	0.076	(0.826)	0.068	0.008
43	3.58	0.17	0.076	(0.822)	0.068	0.008
44	3.67	0.17	0.076	(0.819)	0.068	0.008
45	3.75	0.17	0.076	(0.815)	0.068	0.008
46	3.83	0.20	0.091	(0.812)	0.082	0.009
47	3.92	0.20	0.091	(0.809)	0.082	0.009
48	4.00	0.20	0.091	(0.805)	0.082	0.009
49	4.08	0.20	0.091	(0.802)	0.082	0.009
50	4.17	0.20	0.091	(0.798)	0.082	0.009
51	4.25	0.20	0.091	(0.795)	0.082	0.009
52	4.33	0.23	0.106	(0.792)	0.095	0.011
53	4.42	0.23	0.106	(0.788)	0.095	0.011
54	4.50	0.23	0.106	(0.785)	0.095	0.011
55	4.58	0.23	0.106	(0.781)	0.095	0.011
56	4.67	0.23	0.106	(0.778)	0.095	0.011
57	4.75	0.23	0.106	(0.775)	0.095	0.011
58	4.83	0.27	0.121	(0.771)	0.109	0.012
59	4.92	0.27	0.121	(0.768)	0.109	0.012
60	5.00	0.27	0.121	(0.765)	0.109	0.012
61	5.08	0.20	0.091	(0.761)	0.082	0.009
62	5.17	0.20	0.091	(0.758)	0.082	0.009
63	5.25	0.20	0.091	(0.755)	0.082	0.009
64	5.33	0.23	0.106	(0.751)	0.095	0.011
65	5.42	0.23	0.106	(0.748)	0.095	0.011
66	5.50	0.23	0.106	(0.745)	0.095	0.011
67	5.58	0.27	0.121	(0.742)	0.109	0.012
68	5.67	0.27	0.121	(0.738)	0.109	0.012
69	5.75	0.27	0.121	(0.735)	0.109	0.012
70	5.83	0.27	0.121	(0.732)	0.109	0.012
71	5.92	0.27	0.121	(0.729)	0.109	0.012
72	6.00	0.27	0.121	(0.725)	0.109	0.012
73	6.08	0.30	0.136	(0.722)	0.123	0.014
74	6.17	0.30	0.136	(0.719)	0.123	0.014
75	6.25	0.30	0.136	(0.716)	0.123	0.014
76	6.33	0.30	0.136	(0.713)	0.123	0.014
77	6.42	0.30	0.136	(0.709)	0.123	0.014
78	6.50	0.30	0.136	(0.706)	0.123	0.014
79	6.58	0.33	0.152	(0.703)	0.136	0.015

80	6.67	0.33	0.152	(0.700)	0.136	0.015
81	6.75	0.33	0.152	(0.697)	0.136	0.015
82	6.83	0.33	0.152	(0.694)	0.136	0.015
83	6.92	0.33	0.152	(0.690)	0.136	0.015
84	7.00	0.33	0.152	(0.687)	0.136	0.015
85	7.08	0.33	0.152	(0.684)	0.136	0.015
86	7.17	0.33	0.152	(0.681)	0.136	0.015
87	7.25	0.33	0.152	(0.678)	0.136	0.015
88	7.33	0.37	0.167	(0.675)	0.150	0.017
89	7.42	0.37	0.167	(0.672)	0.150	0.017
90	7.50	0.37	0.167	(0.669)	0.150	0.017
91	7.58	0.40	0.182	(0.666)	0.164	0.018
92	7.67	0.40	0.182	(0.663)	0.164	0.018
93	7.75	0.40	0.182	(0.659)	0.164	0.018
94	7.83	0.43	0.197	(0.656)	0.177	0.020
95	7.92	0.43	0.197	(0.653)	0.177	0.020
96	8.00	0.43	0.197	(0.650)	0.177	0.020
97	8.08	0.50	0.227	(0.647)	0.205	0.023
98	8.17	0.50	0.227	(0.644)	0.205	0.023
99	8.25	0.50	0.227	(0.641)	0.205	0.023
100	8.33	0.50	0.227	(0.638)	0.205	0.023
101	8.42	0.50	0.227	(0.635)	0.205	0.023
102	8.50	0.50	0.227	(0.632)	0.205	0.023
103	8.58	0.53	0.242	(0.629)	0.218	0.024
104	8.67	0.53	0.242	(0.626)	0.218	0.024
105	8.75	0.53	0.242	(0.624)	0.218	0.024
106	8.83	0.57	0.258	(0.621)	0.232	0.026
107	8.92	0.57	0.258	(0.618)	0.232	0.026
108	9.00	0.57	0.258	(0.615)	0.232	0.026
109	9.08	0.63	0.288	(0.612)	0.259	0.029
110	9.17	0.63	0.288	(0.609)	0.259	0.029
111	9.25	0.63	0.288	(0.606)	0.259	0.029
112	9.33	0.67	0.303	(0.603)	0.273	0.030
113	9.42	0.67	0.303	(0.600)	0.273	0.030
114	9.50	0.67	0.303	(0.597)	0.273	0.030
115	9.58	0.70	0.318	(0.595)	0.286	0.032
116	9.67	0.70	0.318	(0.592)	0.286	0.032
117	9.75	0.70	0.318	(0.589)	0.286	0.032
118	9.83	0.73	0.333	(0.586)	0.300	0.033
119	9.92	0.73	0.333	(0.583)	0.300	0.033
120	10.00	0.73	0.333	(0.580)	0.300	0.033
121	10.08	0.50	0.227	(0.578)	0.205	0.023
122	10.17	0.50	0.227	(0.575)	0.205	0.023
123	10.25	0.50	0.227	(0.572)	0.205	0.023
124	10.33	0.50	0.227	(0.569)	0.205	0.023
125	10.42	0.50	0.227	(0.566)	0.205	0.023
126	10.50	0.50	0.227	(0.564)	0.205	0.023
127	10.58	0.67	0.303	(0.561)	0.273	0.030
128	10.67	0.67	0.303	(0.558)	0.273	0.030
129	10.75	0.67	0.303	(0.555)	0.273	0.030
130	10.83	0.67	0.303	(0.553)	0.273	0.030
131	10.92	0.67	0.303	(0.550)	0.273	0.030
132	11.00	0.67	0.303	(0.547)	0.273	0.030
133	11.08	0.63	0.288	(0.545)	0.259	0.029
134	11.17	0.63	0.288	(0.542)	0.259	0.029
135	11.25	0.63	0.288	(0.539)	0.259	0.029
136	11.33	0.63	0.288	(0.537)	0.259	0.029
137	11.42	0.63	0.288	(0.534)	0.259	0.029
138	11.50	0.63	0.288	(0.531)	0.259	0.029
139	11.58	0.57	0.258	(0.529)	0.232	0.026
140	11.67	0.57	0.258	(0.526)	0.232	0.026
141	11.75	0.57	0.258	(0.523)	0.232	0.026
142	11.83	0.60	0.273	(0.521)	0.245	0.027

143	11.92	0.60	0.273	(0.518)	0.245	0.027
144	12.00	0.60	0.273	(0.516)	0.245	0.027
145	12.08	0.83	0.379	(0.513)	0.341	0.038
146	12.17	0.83	0.379	(0.510)	0.341	0.038
147	12.25	0.83	0.379	(0.508)	0.341	0.038
148	12.33	0.87	0.394	(0.505)	0.355	0.039
149	12.42	0.87	0.394	(0.503)	0.355	0.039
150	12.50	0.87	0.394	(0.500)	0.355	0.039
151	12.58	0.93	0.424	(0.498)	0.382	0.042
152	12.67	0.93	0.424	(0.495)	0.382	0.042
153	12.75	0.93	0.424	(0.493)	0.382	0.042
154	12.83	0.97	0.439	(0.490)	0.395	0.044
155	12.92	0.97	0.439	(0.488)	0.395	0.044
156	13.00	0.97	0.439	(0.485)	0.395	0.044
157	13.08	1.13	0.515	(0.483)	0.464	0.052
158	13.17	1.13	0.515	(0.480)	0.464	0.052
159	13.25	1.13	0.515	(0.478)	0.464	0.052
160	13.33	1.13	0.515	(0.476)	0.464	0.052
161	13.42	1.13	0.515	(0.473)	0.464	0.052
162	13.50	1.13	0.515	(0.471)	0.464	0.052
163	13.58	0.77	0.349	(0.468)	0.314	0.035
164	13.67	0.77	0.349	(0.466)	0.314	0.035
165	13.75	0.77	0.349	(0.464)	0.314	0.035
166	13.83	0.77	0.349	(0.461)	0.314	0.035
167	13.92	0.77	0.349	(0.459)	0.314	0.035
168	14.00	0.77	0.349	(0.456)	0.314	0.035
169	14.08	0.90	0.409	(0.454)	0.368	0.041
170	14.17	0.90	0.409	(0.452)	0.368	0.041
171	14.25	0.90	0.409	(0.450)	0.368	0.041
172	14.33	0.87	0.394	(0.447)	0.355	0.039
173	14.42	0.87	0.394	(0.445)	0.355	0.039
174	14.50	0.87	0.394	(0.443)	0.355	0.039
175	14.58	0.87	0.394	(0.440)	0.355	0.039
176	14.67	0.87	0.394	(0.438)	0.355	0.039
177	14.75	0.87	0.394	(0.436)	0.355	0.039
178	14.83	0.83	0.379	(0.434)	0.341	0.038
179	14.92	0.83	0.379	(0.431)	0.341	0.038
180	15.00	0.83	0.379	(0.429)	0.341	0.038
181	15.08	0.80	0.364	(0.427)	0.327	0.036
182	15.17	0.80	0.364	(0.425)	0.327	0.036
183	15.25	0.80	0.364	(0.423)	0.327	0.036
184	15.33	0.77	0.349	(0.420)	0.314	0.035
185	15.42	0.77	0.349	(0.418)	0.314	0.035
186	15.50	0.77	0.349	(0.416)	0.314	0.035
187	15.58	0.63	0.288	(0.414)	0.259	0.029
188	15.67	0.63	0.288	(0.412)	0.259	0.029
189	15.75	0.63	0.288	(0.410)	0.259	0.029
190	15.83	0.63	0.288	(0.408)	0.259	0.029
191	15.92	0.63	0.288	(0.406)	0.259	0.029
192	16.00	0.63	0.288	(0.404)	0.259	0.029
193	16.08	0.13	0.061	(0.402)	0.055	0.006
194	16.17	0.13	0.061	(0.399)	0.055	0.006
195	16.25	0.13	0.061	(0.397)	0.055	0.006
196	16.33	0.13	0.061	(0.395)	0.055	0.006
197	16.42	0.13	0.061	(0.393)	0.055	0.006
198	16.50	0.13	0.061	(0.391)	0.055	0.006
199	16.58	0.10	0.045	(0.389)	0.041	0.005
200	16.67	0.10	0.045	(0.387)	0.041	0.005
201	16.75	0.10	0.045	(0.385)	0.041	0.005
202	16.83	0.10	0.045	(0.383)	0.041	0.005
203	16.92	0.10	0.045	(0.382)	0.041	0.005
204	17.00	0.10	0.045	(0.380)	0.041	0.005
205	17.08	0.17	0.076	(0.378)	0.068	0.008

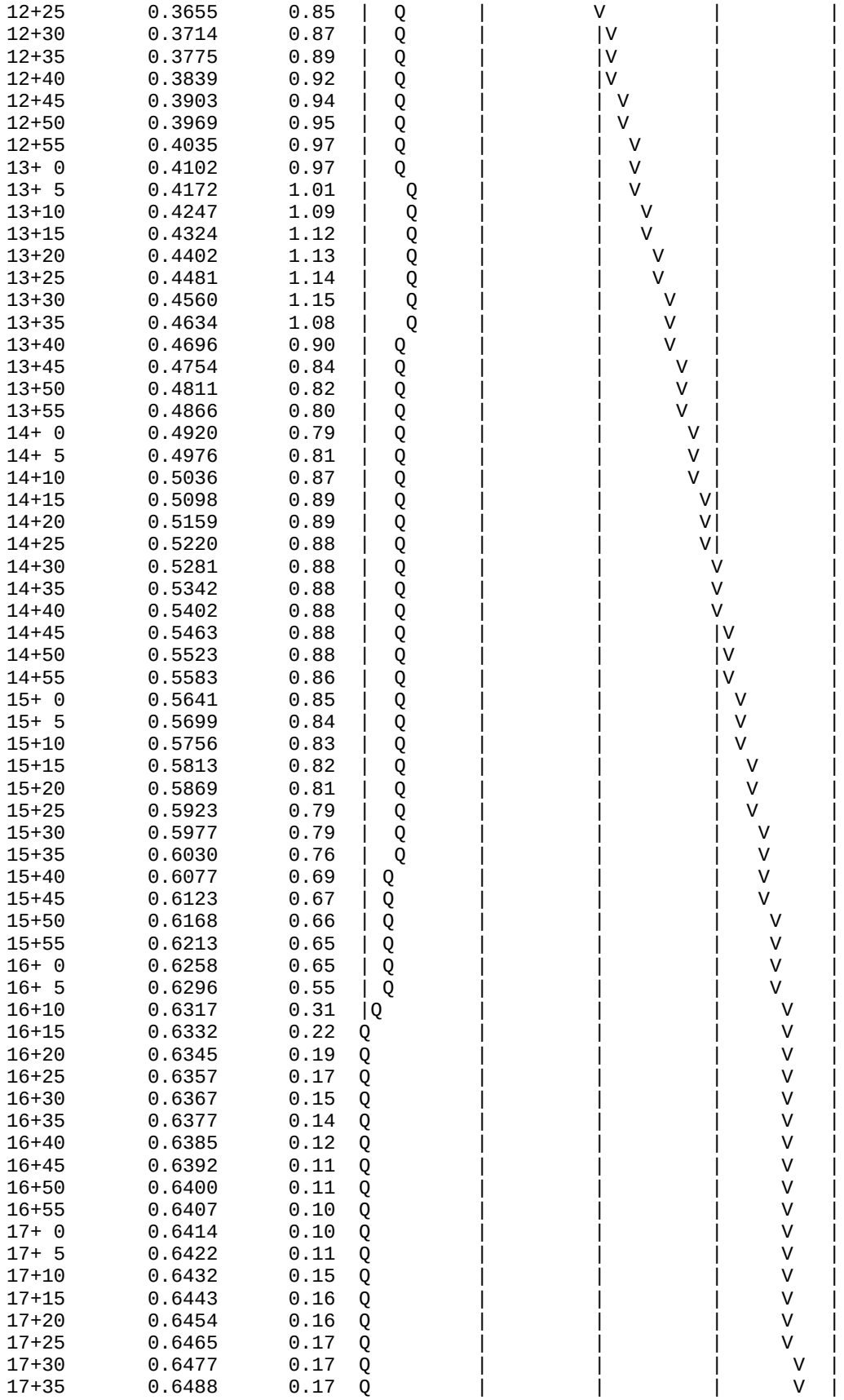
206	17.17	0.17	0.076	(0.376)	0.068	0.008
207	17.25	0.17	0.076	(0.374)	0.068	0.008
208	17.33	0.17	0.076	(0.372)	0.068	0.008
209	17.42	0.17	0.076	(0.370)	0.068	0.008
210	17.50	0.17	0.076	(0.368)	0.068	0.008
211	17.58	0.17	0.076	(0.366)	0.068	0.008
212	17.67	0.17	0.076	(0.365)	0.068	0.008
213	17.75	0.17	0.076	(0.363)	0.068	0.008
214	17.83	0.13	0.061	(0.361)	0.055	0.006
215	17.92	0.13	0.061	(0.359)	0.055	0.006
216	18.00	0.13	0.061	(0.357)	0.055	0.006
217	18.08	0.13	0.061	(0.356)	0.055	0.006
218	18.17	0.13	0.061	(0.354)	0.055	0.006
219	18.25	0.13	0.061	(0.352)	0.055	0.006
220	18.33	0.13	0.061	(0.350)	0.055	0.006
221	18.42	0.13	0.061	(0.349)	0.055	0.006
222	18.50	0.13	0.061	(0.347)	0.055	0.006
223	18.58	0.10	0.045	(0.345)	0.041	0.005
224	18.67	0.10	0.045	(0.344)	0.041	0.005
225	18.75	0.10	0.045	(0.342)	0.041	0.005
226	18.83	0.07	0.030	(0.340)	0.027	0.003
227	18.92	0.07	0.030	(0.339)	0.027	0.003
228	19.00	0.07	0.030	(0.337)	0.027	0.003
229	19.08	0.10	0.045	(0.336)	0.041	0.005
230	19.17	0.10	0.045	(0.334)	0.041	0.005
231	19.25	0.10	0.045	(0.333)	0.041	0.005
232	19.33	0.13	0.061	(0.331)	0.055	0.006
233	19.42	0.13	0.061	(0.329)	0.055	0.006
234	19.50	0.13	0.061	(0.328)	0.055	0.006
235	19.58	0.10	0.045	(0.326)	0.041	0.005
236	19.67	0.10	0.045	(0.325)	0.041	0.005
237	19.75	0.10	0.045	(0.323)	0.041	0.005
238	19.83	0.07	0.030	(0.322)	0.027	0.003
239	19.92	0.07	0.030	(0.321)	0.027	0.003
240	20.00	0.07	0.030	(0.319)	0.027	0.003
241	20.08	0.10	0.045	(0.318)	0.041	0.005
242	20.17	0.10	0.045	(0.316)	0.041	0.005
243	20.25	0.10	0.045	(0.315)	0.041	0.005
244	20.33	0.10	0.045	(0.314)	0.041	0.005
245	20.42	0.10	0.045	(0.312)	0.041	0.005
246	20.50	0.10	0.045	(0.311)	0.041	0.005
247	20.58	0.10	0.045	(0.310)	0.041	0.005
248	20.67	0.10	0.045	(0.308)	0.041	0.005
249	20.75	0.10	0.045	(0.307)	0.041	0.005
250	20.83	0.07	0.030	(0.306)	0.027	0.003
251	20.92	0.07	0.030	(0.305)	0.027	0.003
252	21.00	0.07	0.030	(0.303)	0.027	0.003
253	21.08	0.10	0.045	(0.302)	0.041	0.005
254	21.17	0.10	0.045	(0.301)	0.041	0.005
255	21.25	0.10	0.045	(0.300)	0.041	0.005
256	21.33	0.07	0.030	(0.299)	0.027	0.003
257	21.42	0.07	0.030	(0.297)	0.027	0.003
258	21.50	0.07	0.030	(0.296)	0.027	0.003
259	21.58	0.10	0.045	(0.295)	0.041	0.005
260	21.67	0.10	0.045	(0.294)	0.041	0.005
261	21.75	0.10	0.045	(0.293)	0.041	0.005
262	21.83	0.07	0.030	(0.292)	0.027	0.003
263	21.92	0.07	0.030	(0.291)	0.027	0.003
264	22.00	0.07	0.030	(0.290)	0.027	0.003
265	22.08	0.10	0.045	(0.289)	0.041	0.005
266	22.17	0.10	0.045	(0.288)	0.041	0.005
267	22.25	0.10	0.045	(0.287)	0.041	0.005
268	22.33	0.07	0.030	(0.286)	0.027	0.003

```
269  22.42     0.07      0.030       (  0.286)       0.027        0.003
270  22.50     0.07      0.030       (  0.285)       0.027        0.003
271  22.58     0.07      0.030       (  0.284)       0.027        0.003
272  22.67     0.07      0.030       (  0.283)       0.027        0.003
273  22.75     0.07      0.030       (  0.282)       0.027        0.003
274  22.83     0.07      0.030       (  0.282)       0.027        0.003
275  22.92     0.07      0.030       (  0.281)       0.027        0.003
276  23.00     0.07      0.030       (  0.280)       0.027        0.003
277  23.08     0.07      0.030       (  0.280)       0.027        0.003
278  23.17     0.07      0.030       (  0.279)       0.027        0.003
279  23.25     0.07      0.030       (  0.278)       0.027        0.003
280  23.33     0.07      0.030       (  0.278)       0.027        0.003
281  23.42     0.07      0.030       (  0.277)       0.027        0.003
282  23.50     0.07      0.030       (  0.277)       0.027        0.003
283  23.58     0.07      0.030       (  0.276)       0.027        0.003
284  23.67     0.07      0.030       (  0.276)       0.027        0.003
285  23.75     0.07      0.030       (  0.276)       0.027        0.003
286  23.83     0.07      0.030       (  0.275)       0.027        0.003
287  23.92     0.07      0.030       (  0.275)       0.027        0.003
288  24.00     0.07      0.030       (  0.275)       0.027        0.003
            (Loss Rate Not Used)
    Sum =     100.0                                  Sum =     4.5
     Flood volume = Effective rainfall      0.38(In)
      times area      22.2(Ac.)/[(In)/(Ft.)] =       0.7(Ac.Ft)
     Total soil loss =      3.41(In)
     Total soil loss =     6.299(Ac.Ft)
     Total rainfall =      3.79(In)
     Flood volume =       30485.3 Cubic Feet
     Total soil loss =      274367.6 Cubic Feet
     ---------------------------------------------------------------------
      Peak flow rate of this hydrograph =      1.146(CFS)
     ---------------------------------------------------------------------
     +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
     ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

     ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0001      0.01  Q         |         |         |         |
   0+10       0.0004      0.05  Q         |         |         |         |
   0+15       0.0008      0.06  Q         |         |         |         |
   0+20       0.0012      0.07  Q         |         |         |         |
   0+25       0.0018      0.09  Q         |         |         |         |
   0+30       0.0025      0.09  Q         |         |         |         |
   0+35       0.0032      0.10  Q         |         |         |         |
   0+40       0.0038      0.10  Q         |         |         |         |
   0+45       0.0045      0.10  Q         |         |         |         |
   0+50       0.0053      0.11  Q         |         |         |         |
   0+55       0.0061      0.12  Q         |         |         |         |
   1+ 0       0.0070      0.13  Q         |         |         |         |
   1+ 5       0.0079      0.13  Q         |         |         |         |
   1+10       0.0086      0.11  Q         |         |         |         |
   1+15       0.0094      0.11  Q         |         |         |         |
   1+20       0.0101      0.10  Q         |         |         |         |
   1+25       0.0108      0.10  Q         |         |         |         |
   1+30       0.0115      0.10  Q         |         |         |         |
   1+35       0.0122      0.10  Q         |         |         |         |
   1+40       0.0129      0.10  Q         |         |         |         |
   1+45       0.0136      0.10  Q         |         |         |         |
   1+50       0.0144      0.11  Q         |         |         |         |
```

1+55	0.0152	0.12	Q	|	|	|	|
2+ 0	0.0161	0.13	Q	|	|	|	|
2+ 5	0.0170	0.13	Q	|	|	|	|
2+10	0.0179	0.13	QV	|	|	|	|
2+15	0.0189	0.13	QV	|	|	|	|
2+20	0.0198	0.13	QV	|	|	|	|
2+25	0.0207	0.14	QV	|	|	|	|
2+30	0.0217	0.14	QV	|	|	|	|
2+35	0.0226	0.14	QV	|	|	|	|
2+40	0.0237	0.16	QV	|	|	|	|
2+45	0.0248	0.16	QV	|	|	|	|
2+50	0.0260	0.17	QV	|	|	|	|
2+55	0.0271	0.17	QV	|	|	|	|
3+ 0	0.0283	0.17	QV	|	|	|	|
3+ 5	0.0295	0.17	QV	|	|	|	|
3+10	0.0306	0.17	QV	|	|	|	|
3+15	0.0318	0.17	QV	|	|	|	|
3+20	0.0330	0.17	QV	|	|	|	|
3+25	0.0341	0.17	QV	|	|	|	|
3+30	0.0353	0.17	Q V	|	|	|	|
3+35	0.0365	0.17	Q V	|	|	|	|
3+40	0.0376	0.17	Q V	|	|	|	|
3+45	0.0388	0.17	Q V	|	|	|	|
3+50	0.0400	0.18	Q V	|	|	|	|
3+55	0.0413	0.19	Q V	|	|	|	|
4+ 0	0.0427	0.20	Q V	|	|	|	|
4+ 5	0.0441	0.20	Q V	|	|	|	|
4+10	0.0454	0.20	Q V	|	|	|	|
4+15	0.0468	0.20	Q V	|	|	|	|
4+20	0.0483	0.21	Q V	|	|	|	|
4+25	0.0498	0.23	Q V	|	|	|	|
4+30	0.0514	0.23	Q V	|	|	|	|
4+35	0.0530	0.23	Q V	|	|	|	|
4+40	0.0546	0.24	Q V	|	|	|	|
4+45	0.0563	0.24	Q V	|	|	|	|
4+50	0.0579	0.24	Q V	|	|	|	|
4+55	0.0597	0.26	|Q V	|	|	|	|
5+ 0	0.0616	0.27	|Q V	|	|	|	|
5+ 5	0.0633	0.26	|Q V	|	|	|	|
5+10	0.0649	0.22	Q V	|	|	|	|
5+15	0.0663	0.21	Q V	|	|	|	|
5+20	0.0678	0.22	Q V	|	|	|	|
5+25	0.0694	0.23	Q V	|	|	|	|
5+30	0.0710	0.23	Q V	|	|	|	|
5+35	0.0727	0.24	Q V	|	|	|	|
5+40	0.0744	0.26	|Q V	|	|	|	|
5+45	0.0763	0.26	|Q V	|	|	|	|
5+50	0.0781	0.27	|Q V	|	|	|	|
5+55	0.0799	0.27	|Q V	|	|	|	|
6+ 0	0.0818	0.27	|Q V	|	|	|	|
6+ 5	0.0837	0.28	|Q V	|	|	|	|
6+10	0.0857	0.29	|Q V	|	|	|	|
6+15	0.0878	0.30	|Q V	|	|	|	|
6+20	0.0899	0.30	|Q V	|	|	|	|
6+25	0.0920	0.30	|Q V	|	|	|	|
6+30	0.0940	0.30	|Q V	|	|	|	|
6+35	0.0962	0.31	|Q V	|	|	|	|
6+40	0.0984	0.33	|Q V	|	|	|	|
6+45	0.1007	0.33	|Q V	|	|	|	|
6+50	0.1030	0.34	|Q V	|	|	|	|
6+55	0.1054	0.34	|Q V	|	|	|	|
7+ 0	0.1077	0.34	|Q V	|	|	|	|
7+ 5	0.1100	0.34	|Q V	|	|	|	|

7+10	0.1123	0.34	Q V				
7+15	0.1147	0.34	Q V				
7+20	0.1171	0.34	Q V				
7+25	0.1195	0.36	Q V				
7+30	0.1221	0.37	Q V				
7+35	0.1247	0.38	Q V				
7+40	0.1274	0.39	Q V				
7+45	0.1301	0.40	Q V				
7+50	0.1329	0.41	Q V				
7+55	0.1359	0.43	Q V				
8+ 0	0.1388	0.43	Q V				
8+ 5	0.1419	0.45	Q V				
8+10	0.1453	0.48	Q V				
8+15	0.1487	0.50	Q V				
8+20	0.1521	0.50	Q V				
8+25	0.1556	0.50	Q V				
8+30	0.1591	0.51	Q V				
8+35	0.1626	0.51	Q V				
8+40	0.1663	0.53	Q V				
8+45	0.1700	0.54	Q V				
8+50	0.1737	0.54	Q V				
8+55	0.1776	0.56	Q V				
9+ 0	0.1815	0.57	Q V				
9+ 5	0.1855	0.58	Q V				
9+10	0.1898	0.62	Q V				
9+15	0.1941	0.63	Q V				
9+20	0.1986	0.64	Q V				
9+25	0.2031	0.66	Q V				
9+30	0.2077	0.67	Q V				
9+35	0.2124	0.68	Q V				
9+40	0.2172	0.70	Q V				
9+45	0.2220	0.70	Q V				
9+50	0.2270	0.71	Q V				
9+55	0.2320	0.73	Q V				
10+ 0	0.2371	0.74	Q V				
10+ 5	0.2419	0.70	Q V				
10+10	0.2459	0.58	Q V				
10+15	0.2497	0.55	Q V				
10+20	0.2534	0.53	Q V				
10+25	0.2569	0.52	Q V				
10+30	0.2605	0.52	Q V				
10+35	0.2642	0.54	Q V				
10+40	0.2685	0.62	Q V				
10+45	0.2730	0.65	Q V				
10+50	0.2775	0.66	Q V				
10+55	0.2821	0.67	Q V				
11+ 0	0.2868	0.67	Q V				
11+ 5	0.2914	0.67	Q V				
11+10	0.2959	0.65	Q V				
11+15	0.3003	0.65	Q V				
11+20	0.3048	0.65	Q V				
11+25	0.3092	0.65	Q V				
11+30	0.3137	0.64	Q V				
11+35	0.3180	0.63	Q V				
11+40	0.3222	0.60	Q V				
11+45	0.3262	0.59	Q V				
11+50	0.3303	0.59	Q V				
11+55	0.3344	0.60	Q V				
12+ 0	0.3386	0.61	Q V				
12+ 5	0.3431	0.65	Q V				
12+10	0.3483	0.77	Q V				
12+15	0.3539	0.80	Q V				
12+20	0.3596	0.83	Q V				


12+25 0.3655 0.85
12+30 0.3714 0.87
12+35 0.3775 0.89
12+40 0.3839 0.92
12+45 0.3903 0.94
12+50 0.3969 0.95
12+55 0.4035 0.97
13+ 0 0.4102 0.97
13+ 5 0.4172 1.01
13+10 0.4247 1.09
13+15 0.4324 1.12
13+20 0.4402 1.13
13+25 0.4481 1.14
13+30 0.4560 1.15
13+35 0.4634 1.08
13+40 0.4696 0.90
13+45 0.4754 0.84
13+50 0.4811 0.82
13+55 0.4866 0.80
14+ 0 0.4920 0.79
14+ 5 0.4976 0.81
14+10 0.5036 0.87
14+15 0.5098 0.89
14+20 0.5159 0.89
14+25 0.5220 0.88
14+30 0.5281 0.88
14+35 0.5342 0.88
14+40 0.5402 0.88
14+45 0.5463 0.88
14+50 0.5523 0.88
14+55 0.5583 0.86
15+ 0 0.5641 0.85
15+ 5 0.5699 0.84
15+10 0.5756 0.83
15+15 0.5813 0.82
15+20 0.5869 0.81
15+25 0.5923 0.79
15+30 0.5977 0.79
15+35 0.6030 0.76
15+40 0.6077 0.69
15+45 0.6123 0.67
15+50 0.6168 0.66
15+55 0.6213 0.65
16+ 0 0.6258 0.65
16+ 5 0.6296 0.55
16+10 0.6317 0.31
16+15 0.6332 0.22
16+20 0.6345 0.19
16+25 0.6357 0.17
16+30 0.6367 0.15
16+35 0.6377 0.14
16+40 0.6385 0.12
16+45 0.6392 0.11
16+50 0.6400 0.11
16+55 0.6407 0.10
17+ 0 0.6414 0.10
17+ 5 0.6422 0.11
17+10 0.6432 0.15
17+15 0.6443 0.16
17+20 0.6454 0.16
17+25 0.6465 0.17
17+30 0.6477 0.17
17+35 0.6488 0.17

17+40	0.6500	0.17	Q	|	|	|	V |
17+45	0.6512	0.17	Q	|	|	|	V |
17+50	0.6523	0.16	Q	|	|	|	V |
17+55	0.6533	0.15	Q	|	|	|	V |
18+ 0	0.6543	0.14	Q	|	|	|	V |
18+ 5	0.6552	0.14	Q	|	|	|	V |
18+10	0.6562	0.14	Q	|	|	|	V |
18+15	0.6571	0.14	Q	|	|	|	V |
18+20	0.6580	0.14	Q	|	|	|	V |
18+25	0.6590	0.14	Q	|	|	|	V |
18+30	0.6599	0.14	Q	|	|	|	V |
18+35	0.6608	0.13	Q	|	|	|	V |
18+40	0.6616	0.11	Q	|	|	|	V |
18+45	0.6623	0.11	Q	|	|	|	V |
18+50	0.6630	0.10	Q	|	|	|	V |
18+55	0.6636	0.08	Q	|	|	|	V |
19+ 0	0.6641	0.07	Q	|	|	|	V |
19+ 5	0.6646	0.08	Q	|	|	|	V |
19+10	0.6653	0.09	Q	|	|	|	V |
19+15	0.6659	0.10	Q	|	|	|	V |
19+20	0.6666	0.11	Q	|	|	|	V |
19+25	0.6675	0.12	Q	|	|	|	V |
19+30	0.6684	0.13	Q	|	|	|	V |
19+35	0.6692	0.13	Q	|	|	|	V |
19+40	0.6700	0.11	Q	|	|	|	V |
19+45	0.6707	0.11	Q	|	|	|	V |
19+50	0.6714	0.10	Q	|	|	|	V |
19+55	0.6720	0.08	Q	|	|	|	V |
20+ 0	0.6725	0.07	Q	|	|	|	V |
20+ 5	0.6730	0.08	Q	|	|	|	V |
20+10	0.6736	0.09	Q	|	|	|	V |
20+15	0.6743	0.10	Q	|	|	|	V |
20+20	0.6750	0.10	Q	|	|	|	V |
20+25	0.6757	0.10	Q	|	|	|	V |
20+30	0.6764	0.10	Q	|	|	|	V |
20+35	0.6771	0.10	Q	|	|	|	V |
20+40	0.6778	0.10	Q	|	|	|	V |
20+45	0.6785	0.10	Q	|	|	|	V |
20+50	0.6791	0.10	Q	|	|	|	V |
20+55	0.6797	0.08	Q	|	|	|	V |
21+ 0	0.6802	0.07	Q	|	|	|	V |
21+ 5	0.6807	0.08	Q	|	|	|	V |
21+10	0.6813	0.09	Q	|	|	|	V |
21+15	0.6820	0.10	Q	|	|	|	V |
21+20	0.6827	0.09	Q	|	|	|	V|
21+25	0.6832	0.08	Q	|	|	|	V|
21+30	0.6837	0.07	Q	|	|	|	V|
21+35	0.6842	0.08	Q	|	|	|	V|
21+40	0.6848	0.09	Q	|	|	|	V|
21+45	0.6855	0.10	Q	|	|	|	V|
21+50	0.6862	0.09	Q	|	|	|	V|
21+55	0.6867	0.08	Q	|	|	|	V|
22+ 0	0.6872	0.07	Q	|	|	|	V|
22+ 5	0.6877	0.08	Q	|	|	|	V|
22+10	0.6883	0.09	Q	|	|	|	V|
22+15	0.6890	0.10	Q	|	|	|	V|
22+20	0.6897	0.09	Q	|	|	|	V|
22+25	0.6902	0.08	Q	|	|	|	V|
22+30	0.6907	0.07	Q	|	|	|	V|
22+35	0.6912	0.07	Q	|	|	|	V|
22+40	0.6916	0.07	Q	|	|	|	V|
22+45	0.6921	0.07	Q	|	|	|	V|
22+50	0.6926	0.07	Q	|	|	|	V|

22+55	0.6931	0.07	Q	|	|	|	V|
23+ 0	0.6935	0.07	Q	|	|	|	V|
23+ 5	0.6940	0.07	Q	|	|	|	V|
23+10	0.6945	0.07	Q	|	|	|	V|
23+15	0.6949	0.07	Q	|	|	|	V|
23+20	0.6954	0.07	Q	|	|	|	V|
23+25	0.6959	0.07	Q	|	|	|	V|
23+30	0.6963	0.07	Q	|	|	|	V|
23+35	0.6968	0.07	Q	|	|	|	V|
23+40	0.6973	0.07	Q	|	|	|	V|
23+45	0.6977	0.07	Q	|	|	|	V|
23+50	0.6982	0.07	Q	|	|	|	V|
23+55	0.6987	0.07	Q	|	|	|	V|
24+ 0	0.6991	0.07	Q	|	|	|	V|
24+ 5	0.6995	0.06	Q	|	|	|	V|
24+10	0.6997	0.02	Q	|	|	|	V|
24+15	0.6997	0.01	Q	|	|	|	V|
24+20	0.6998	0.01	Q	|	|	|	V|
24+25	0.6998	0.00	Q	|	|	|	V|
24+30	0.6998	0.00	Q	|	|	|	V|
24+35	0.6998	0.00	Q	|	|	|	V|
24+40	0.6998	0.00	Q	|	|	|	V|

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: BUH56EXIST65.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "B"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
5 YEAR - 6 HOUR
FN: BUH56EXIST

Drainage Area = 22.17(Ac.) = 0.035 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 22.17(Ac.) = 0.035 Sq. Mi.
Length along longest watercourse = 1554.00(Ft.)
Length along longest watercourse measured to centroid = 665.00(Ft.)
Length along longest watercourse = 0.294 Mi.
Length along longest watercourse measured to centroid = 0.126 Mi.
Difference in elevation = 68.00(Ft.)
Slope along watercourse = 231.0425 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.085 Hr.
Lag time = 5.12 Min.
25% of lag time = 1.28 Min.
40% of lag time = 2.05 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	1.40	31.04

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	3.00	66.51

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 1.400(In)
Area Averaged 100-Year Rainfall = 3.000(In)

Point rain (area averaged) = 1.775(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.775(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.170	71.00	0.000

Total Area Entered = 22.17(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
71.0	52.2	0.550	0.000	0.550	1.000	0.550
					Sum (F) =	0.550

Area averaged mean soil loss (F) (In/Hr) = 0.550
Minimum soil loss rate ((In/Hr)) = 0.275
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	97.593	18.462	4.125
2	0.167	195.186	48.190	10.767
3	0.250	292.779	16.014	3.578
4	0.333	390.372	7.192	1.607
5	0.417	487.965	4.075	0.911
6	0.500	585.559	2.644	0.591
7	0.583	683.152	1.677	0.375
8	0.667	780.745	1.065	0.238
9	0.750	878.338	0.681	0.152
		Sum = 100.000	Sum=	22.343

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.106	(0.550)	0.096	0.011
2	0.17	0.60	0.128	(0.550)	0.115	0.013
3	0.25	0.60	0.128	(0.550)	0.115	0.013
4	0.33	0.60	0.128	(0.550)	0.115	0.013
5	0.42	0.60	0.128	(0.550)	0.115	0.013
6	0.50	0.70	0.149	(0.550)	0.134	0.015
7	0.58	0.70	0.149	(0.550)	0.134	0.015
8	0.67	0.70	0.149	(0.550)	0.134	0.015
9	0.75	0.70	0.149	(0.550)	0.134	0.015
10	0.83	0.70	0.149	(0.550)	0.134	0.015
11	0.92	0.70	0.149	(0.550)	0.134	0.015
12	1.00	0.80	0.170	(0.550)	0.153	0.017
13	1.08	0.80	0.170	(0.550)	0.153	0.017
14	1.17	0.80	0.170	(0.550)	0.153	0.017
15	1.25	0.80	0.170	(0.550)	0.153	0.017
16	1.33	0.80	0.170	(0.550)	0.153	0.017

17	1.42	0.80	0.170	(0.550)	0.153	0.017
18	1.50	0.80	0.170	(0.550)	0.153	0.017
19	1.58	0.80	0.170	(0.550)	0.153	0.017
20	1.67	0.80	0.170	(0.550)	0.153	0.017
21	1.75	0.80	0.170	(0.550)	0.153	0.017
22	1.83	0.80	0.170	(0.550)	0.153	0.017
23	1.92	0.80	0.170	(0.550)	0.153	0.017
24	2.00	0.90	0.192	(0.550)	0.172	0.019
25	2.08	0.80	0.170	(0.550)	0.153	0.017
26	2.17	0.90	0.192	(0.550)	0.172	0.019
27	2.25	0.90	0.192	(0.550)	0.172	0.019
28	2.33	0.90	0.192	(0.550)	0.172	0.019
29	2.42	0.90	0.192	(0.550)	0.172	0.019
30	2.50	0.90	0.192	(0.550)	0.172	0.019
31	2.58	0.90	0.192	(0.550)	0.172	0.019
32	2.67	0.90	0.192	(0.550)	0.172	0.019
33	2.75	1.00	0.213	(0.550)	0.192	0.021
34	2.83	1.00	0.213	(0.550)	0.192	0.021
35	2.92	1.00	0.213	(0.550)	0.192	0.021
36	3.00	1.00	0.213	(0.550)	0.192	0.021
37	3.08	1.00	0.213	(0.550)	0.192	0.021
38	3.17	1.10	0.234	(0.550)	0.211	0.023
39	3.25	1.10	0.234	(0.550)	0.211	0.023
40	3.33	1.10	0.234	(0.550)	0.211	0.023
41	3.42	1.20	0.256	(0.550)	0.230	0.026
42	3.50	1.30	0.277	(0.550)	0.249	0.028
43	3.58	1.40	0.298	(0.550)	0.268	0.030
44	3.67	1.40	0.298	(0.550)	0.268	0.030
45	3.75	1.50	0.319	(0.550)	0.287	0.032
46	3.83	1.50	0.319	(0.550)	0.287	0.032
47	3.92	1.60	0.341	(0.550)	0.307	0.034
48	4.00	1.60	0.341	(0.550)	0.307	0.034
49	4.08	1.70	0.362	(0.550)	0.326	0.036
50	4.17	1.80	0.383	(0.550)	0.345	0.038
51	4.25	1.90	0.405	(0.550)	0.364	0.040
52	4.33	2.00	0.426	(0.550)	0.383	0.043
53	4.42	2.10	0.447	(0.550)	0.402	0.045
54	4.50	2.10	0.447	(0.550)	0.402	0.045
55	4.58	2.20	0.469	(0.550)	0.422	0.047
56	4.67	2.30	0.490	(0.550)	0.441	0.049
57	4.75	2.40	0.511	(0.550)	0.460	0.051
58	4.83	2.40	0.511	(0.550)	0.460	0.051
59	4.92	2.50	0.532	(0.550)	0.479	0.053
60	5.00	2.60	0.554	(0.550)	0.498	0.055
61	5.08	3.10	0.660	0.550	(0.594)	0.111
62	5.17	3.60	0.767	0.550	(0.690)	0.217
63	5.25	3.90	0.831	0.550	(0.747)	0.281
64	5.33	4.20	0.894	0.550	(0.805)	0.345
65	5.42	4.70	1.001	0.550	(0.901)	0.451
66	5.50	5.60	1.193	0.550	(1.073)	0.643
67	5.58	1.90	0.405	(0.550)	0.364	0.040
68	5.67	0.90	0.192	(0.550)	0.172	0.019
69	5.75	0.60	0.128	(0.550)	0.115	0.013
70	5.83	0.50	0.106	(0.550)	0.096	0.011
71	5.92	0.30	0.064	(0.550)	0.057	0.006
72	6.00	0.20	0.043	(0.550)	0.038	0.004

(Loss Rate Not Used)

Sum = 100.0 Sum = 3.6

Flood volume = Effective rainfall 0.30(In)
times area 22.2(Ac.)/[(In)/(Ft.)] = 0.6(Ac.Ft)
Total soil loss = 1.47(In)
Total soil loss = 2.718(Ac.Ft)
Total rainfall = 1.77(In)

Flood volume = 24430.4 Cubic Feet
Total soil loss = 118386.1 Cubic Feet

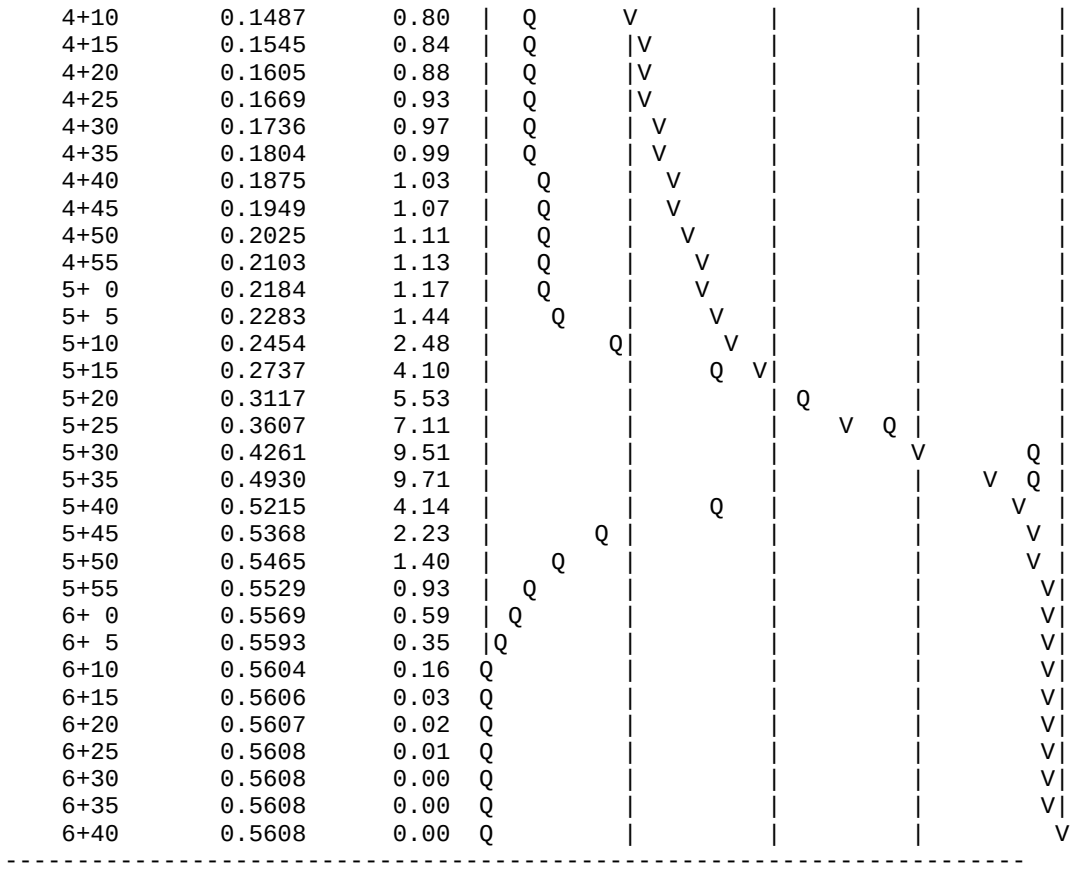
Peak flow rate of this hydrograph = 9.711(CFS)

++

6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 2.5 5.0 7.5 10.0
0+ 5	0.0003	0.04	Q | | | |
0+10	0.0015	0.17	Q | | | |
0+15	0.0030	0.23	Q | | | |
0+20	0.0048	0.25	VQ | | | |
0+25	0.0066	0.27	VQ | | | |
0+30	0.0086	0.28	VQ | | | |
0+35	0.0107	0.31	VQ | | | |
0+40	0.0129	0.32	VQ | | | |
0+45	0.0152	0.33	|Q | | | |
0+50	0.0175	0.33	|Q | | | |
0+55	0.0197	0.33	|Q | | | |
1+ 0	0.0221	0.34	|Q | | | |
1+ 5	0.0246	0.36	|Q | | | |
1+10	0.0272	0.37	|Q | | | |
1+15	0.0298	0.38	|QV | | | |
1+20	0.0324	0.38	|QV | | | |
1+25	0.0350	0.38	|QV | | | |
1+30	0.0376	0.38	|QV | | | |
1+35	0.0402	0.38	|QV | | | |
1+40	0.0428	0.38	|Q V | | | |
1+45	0.0455	0.38	|Q V | | | |
1+50	0.0481	0.38	|Q V | | | |
1+55	0.0507	0.38	|Q V | | | |
2+ 0	0.0534	0.39	|Q V | | | |
2+ 5	0.0562	0.40	|Q V | | | |
2+10	0.0589	0.40	|Q V | | | |
2+15	0.0618	0.42	|Q V | | | |
2+20	0.0647	0.42	|Q V | | | |
2+25	0.0676	0.42	|Q V | | | |
2+30	0.0705	0.43	|Q V | | | |
2+35	0.0735	0.43	|Q V | | | |
2+40	0.0764	0.43	|Q V | | | |
2+45	0.0794	0.44	|Q V | | | |
2+50	0.0826	0.46	|Q V | | | |
2+55	0.0858	0.47	|Q V | | | |
3+ 0	0.0891	0.47	|Q V | | | |
3+ 5	0.0923	0.47	|Q V | | | |
3+10	0.0957	0.48	|Q V | | | |
3+15	0.0992	0.51	| Q V | | | |
3+20	0.1027	0.52	| Q V | | | |
3+25	0.1063	0.53	| Q V | | | |
3+30	0.1102	0.56	| Q V | | | |
3+35	0.1143	0.60	| Q V | | | |
3+40	0.1187	0.64	| Q V | | | |
3+45	0.1233	0.66	| Q V | | | |
3+50	0.1280	0.69	| Q V| | | |
3+55	0.1329	0.71	| Q V| | | |
4+ 0	0.1380	0.74	| Q V| | | |
4+ 5	0.1432	0.76	| Q V | | |


4+10 0.1487 0.80
4+15 0.1545 0.84
4+20 0.1605 0.88
4+25 0.1669 0.93
4+30 0.1736 0.97
4+35 0.1804 0.99
4+40 0.1875 1.03
4+45 0.1949 1.07
4+50 0.2025 1.11
4+55 0.2103 1.13
5+ 0 0.2184 1.17
5+ 5 0.2283 1.44
5+10 0.2454 2.48
5+15 0.2737 4.10
5+20 0.3117 5.53
5+25 0.3607 7.11
5+30 0.4261 9.51
5+35 0.4930 9.71
5+40 0.5215 4.14
5+45 0.5368 2.23
5+50 0.5465 1.40
5+55 0.5529 0.93
6+ 0 0.5569 0.59
6+ 5 0.5593 0.35
6+10 0.5604 0.16
6+15 0.5606 0.03
6+20 0.5607 0.02
6+25 0.5608 0.01
6+30 0.5608 0.00
6+35 0.5608 0.00
6+40 0.5608 0.00

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: BUH53EXIST35.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "B"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
5 YEAR - 3 HOUR
FN: BUH53EXIST

Drainage Area = 22.17(Ac.) = 0.035 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 22.17(Ac.) = 0.035 Sq. Mi.
Length along longest watercourse = 1554.00(Ft.)
Length along longest watercourse measured to centroid = 665.00(Ft.)
Length along longest watercourse = 0.294 Mi.
Length along longest watercourse measured to centroid = 0.126 Mi.
Difference in elevation = 68.00(Ft.)
Slope along watercourse = 231.0425 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.085 Hr.
Lag time = 5.12 Min.
25% of lag time = 1.28 Min.
40% of lag time = 2.05 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	1.00	22.17

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	2.40	53.21

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 1.000(In)
Area Averaged 100-Year Rainfall = 2.400(In)

Point rain (area averaged) = 1.328(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.328(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.170	71.00	0.000

Total Area Entered = 22.17(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
71.0	52.2	0.550	0.000	0.550	1.000	0.550
					Sum (F) =	0.550

Area averaged mean soil loss (F) (In/Hr) = 0.550
Minimum soil loss rate ((In/Hr)) = 0.275
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	97.593	18.462	4.125
2	0.167	195.186	48.190	10.767
3	0.250	292.779	16.014	3.578
4	0.333	390.372	7.192	1.607
5	0.417	487.965	4.075	0.911
6	0.500	585.559	2.644	0.591
7	0.583	683.152	1.677	0.375
8	0.667	780.745	1.065	0.238
9	0.750	878.338	0.681	0.152
		Sum = 100.000	Sum=	22.343

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.207	(0.550)	0.186	0.021
2	0.17	1.30	0.207	(0.550)	0.186	0.021
3	0.25	1.10	0.175	(0.550)	0.158	0.018
4	0.33	1.50	0.239	(0.550)	0.215	0.024
5	0.42	1.50	0.239	(0.550)	0.215	0.024
6	0.50	1.80	0.287	(0.550)	0.258	0.029
7	0.58	1.50	0.239	(0.550)	0.215	0.024
8	0.67	1.80	0.287	(0.550)	0.258	0.029
9	0.75	1.80	0.287	(0.550)	0.258	0.029
10	0.83	1.50	0.239	(0.550)	0.215	0.024
11	0.92	1.60	0.255	(0.550)	0.229	0.025
12	1.00	1.80	0.287	(0.550)	0.258	0.029
13	1.08	2.20	0.351	(0.550)	0.315	0.035
14	1.17	2.20	0.351	(0.550)	0.315	0.035
15	1.25	2.20	0.351	(0.550)	0.315	0.035
16	1.33	2.00	0.319	(0.550)	0.287	0.032

```
17   1.42     2.60      0.414       (  0.550)       0.373        0.041
18   1.50     2.70      0.430       (  0.550)       0.387        0.043
19   1.58     2.40      0.382       (  0.550)       0.344        0.038
20   1.67     2.70      0.430       (  0.550)       0.387        0.043
21   1.75     3.30      0.526       (  0.550)       0.473        0.053
22   1.83     3.10      0.494       (  0.550)       0.445        0.049
23   1.92     2.90      0.462       (  0.550)       0.416        0.046
24   2.00     3.00      0.478       (  0.550)       0.430        0.048
25   2.08     3.10      0.494       (  0.550)       0.445        0.049
26   2.17     4.20      0.669          0.550    (  0.602)        0.120
27   2.25     5.00      0.797          0.550    (  0.717)        0.247
28   2.33     3.50      0.558       (  0.550)       0.502        0.056
29   2.42     6.80      1.083          0.550    (  0.975)        0.534
30   2.50     7.30      1.163          0.550    (  1.047)        0.614
31   2.58     8.20      1.307          0.550    (  1.176)        0.757
32   2.67     5.90      0.940          0.550    (  0.846)        0.391
33   2.75     2.00      0.319       (  0.550)       0.287        0.032
34   2.83     1.80      0.287       (  0.550)       0.258        0.029
35   2.92     1.80      0.287       (  0.550)       0.258        0.029
36   3.00     0.60      0.096       (  0.550)       0.086        0.010
           (Loss Rate Not Used)
   Sum =     100.0                                   Sum =     3.7
    Flood volume = Effective rainfall      0.30(In)
     times area      22.2(Ac.)/[(In)/(Ft.)] =       0.6(Ac.Ft)
    Total soil loss =      1.02(In)
    Total soil loss =     1.890(Ac.Ft)
    Total rainfall =      1.33(In)
    Flood volume =       24540.0 Cubic Feet
    Total soil loss =       82316.3 Cubic Feet
    ---------------------------------------------------------------------
     Peak flow rate of this hydrograph =     13.082(CFS)
    ---------------------------------------------------------------------
    +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                      3 - H O U R    S T O R M
                  R u n o f f      H y d r o g r a p h
    ---------------------------------------------------------------------
               Hydrograph in   5   Minute intervals ((CFS))

    ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
-------------------------------------------------------------------------
  0+ 5       0.0006      0.09  Q         |         |         |         |
  0+10       0.0027      0.31  Q         |         |         |         |
  0+15       0.0053      0.37  Q         |         |         |         |
  0+20       0.0080      0.39  Q         |         |         |         |
  0+25       0.0112      0.47  Q         |         |         |         |
  0+30       0.0148      0.52  |Q        |         |         |         |
  0+35       0.0187      0.57  |Q        |         |         |         |
  0+40       0.0226      0.56  |Q        |         |         |         |
  0+45       0.0268      0.61  |Q        |         |         |         |
  0+50       0.0310      0.61  |QV       |         |         |         |
  0+55       0.0349      0.57  |QV       |         |         |         |
  1+ 0       0.0389      0.59  |QV       |         |         |         |
  1+ 5       0.0433      0.65  |Q V      |         |         |         |
  1+10       0.0483      0.73  |Q V      |         |         |         |
  1+15       0.0535      0.75  |Q V      |         |         |         |
  1+20       0.0587      0.75  |Q  V     |         |         |         |
  1+25       0.0640      0.76  |Q  V     |         |         |         |
  1+30       0.0699      0.87  |Q  V     |         |         |         |
  1+35       0.0761      0.90  |Q   V    |         |         |         |
  1+40       0.0822      0.89  |Q   V    |         |         |         |
  1+45       0.0889      0.97  |Q    V   |         |         |         |
  1+50       0.0963      1.08  | Q   V   |         |         |         |
```

```
    1+55       0.1037      1.07  | Q    V  |          |          |          |
    2+ 0       0.1109      1.05  | Q    V  |          |          |          |
    2+ 5       0.1182      1.07  | Q     V |          |          |          |
    2+10       0.1277      1.38  | Q      V|          |          |          |
    2+15       0.1461      2.67  |    Q    V          |          |          |
    2+20       0.1703      3.51  |      Q  | V        |          |          |
    2+25       0.1978      3.99  |      Q  |   V      |          |          |
    2+30       0.2601      9.06  |         |       Q  |          |          |
    2+35       0.3433     12.07  |         |          |   Q      |          |
    2+40       0.4334     13.08  |         |          |     Q   V          |
    2+45       0.4932      8.68  |         |      Q   |          |    V     |
    2+50       0.5210      4.05  |       Q |          |          |     V    |
    2+55       0.5381      2.47  |   Q     |          |          |       V  |
    3+ 0       0.5496      1.67  |  Q      |          |          |        V |
    3+ 5       0.5566      1.02  | Q       |          |          |        V |
    3+10       0.5604      0.55  |Q        |          |          |        V |
    3+15       0.5623      0.28  Q         |          |          |        V |
    3+20       0.5630      0.10  Q         |          |          |        V |
    3+25       0.5632      0.03  Q         |          |          |        V |
    3+30       0.5633      0.01  Q         |          |          |        V |
    3+35       0.5634      0.01  Q         |          |          |        V |
    3+40       0.5634      0.00  Q         |          |          |        V |
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: BUH51EXIST15.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "B"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
5 YEAR - 1 HOUR
FN: BUH51EXIST

Drainage Area = 22.17(Ac.) = 0.035 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 22.17(Ac.) = 0.035 Sq. Mi.
Length along longest watercourse = 1554.00(Ft.)
Length along longest watercourse measured to centroid = 665.00(Ft.)
Length along longest watercourse = 0.294 Mi.
Length along longest watercourse measured to centroid = 0.126 Mi.
Difference in elevation = 68.00(Ft.)
Slope along watercourse = 231.0425 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.085 Hr.
Lag time = 5.12 Min.
25% of lag time = 1.28 Min.
40% of lag time = 2.05 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	0.55	12.19

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	1.36	30.15

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 0.550(In)
Area Averaged 100-Year Rainfall = 1.360(In)

Point rain (area averaged) = 0.740(In)
Areal adjustment factor = 99.98 %
Adjusted average point rain = 0.740(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.170	71.00	0.000

Total Area Entered = 22.17(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
71.0	52.2	0.550	0.000	0.550	1.000	0.550
					Sum (F) =	0.550

Area averaged mean soil loss (F) (In/Hr) = 0.550
Minimum soil loss rate ((In/Hr)) = 0.275
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.4800

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	97.593	18.462	4.125
2	0.167	195.186	48.190	10.767
3	0.250	292.779	16.014	3.578
4	0.333	390.372	7.192	1.607
5	0.417	487.965	4.075	0.911
6	0.500	585.559	2.644	0.591
7	0.583	683.152	1.677	0.375
8	0.667	780.745	1.065	0.238
9	0.750	878.338	0.681	0.152
		Sum = 100.000	Sum=	22.343

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	4.40	0.390	(0.550)	0.351	0.039
2	0.17	4.50	0.399	(0.550)	0.359	0.040
3	0.25	5.40	0.479	(0.550)	0.431	0.048
4	0.33	5.40	0.479	(0.550)	0.431	0.048
5	0.42	5.70	0.506	(0.550)	0.455	0.051
6	0.50	6.40	0.568	(0.550)	0.511	0.057
7	0.58	7.90	0.701	0.550	(0.631)	0.152
8	0.67	9.10	0.808	0.550	(0.727)	0.258
9	0.75	12.80	1.136	0.550	(1.022)	0.586
10	0.83	25.60	2.272	0.550	(2.045)	1.722
11	0.92	7.90	0.701	0.550	(0.631)	0.152
12	1.00	4.90	0.435	(0.550)	0.391	0.043
	(Loss Rate Not Used)					
Sum =	100.0			Sum =	3.2	

```
      Flood volume = Effective rainfall      0.27(In)
       times area      22.2(Ac.)/[(In)/(Ft.)] =       0.5(Ac.Ft)
      Total soil loss =      0.47(In)
      Total soil loss =     0.874(Ac.Ft)
      Total rainfall =      0.74(In)
      Flood volume =       21431.8 Cubic Feet
      Total soil loss =       38086.9 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =     21.904(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                           1 - H O U R    S T O R M
                      R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
   ---------------------------------------------------------------------
     0+ 5       0.0011      0.16  Q         |          |          |          |
     0+10       0.0051      0.59  Q         |          |          |          |
     0+15       0.0104      0.77  VQ        |          |          |          |
     0+20       0.0168      0.92  |Q        |          |          |          |
     0+25       0.0236      1.00  |Q        |          |          |          |
     0+30       0.0311      1.09  |QV       |          |          |          |
     0+35       0.0420      1.58  | QV      |          |          |          |
     0+40       0.0632      3.08  |   QV    |          |          |          |
     0+45       0.1041      5.94  |      QV |          |          |          |
     0+50       0.2054     14.71  |         |     V  Q |          |          |
     0+55       0.3563     21.90  |         |          |       VQ |          |
     1+ 0       0.4202      9.29  |         | Q        |          |   V      |
     1+ 5       0.4515      4.55  |     Q   |          |          |     V    |
     1+10       0.4684      2.46  |  Q      |          |          |       V  |
     1+15       0.4790      1.53  | Q       |          |          |       V  |
     1+20       0.4856      0.95  |Q        |          |          |        V |
     1+25       0.4896      0.58  Q         |          |          |        V |
     1+30       0.4917      0.31  Q         |          |          |        V |
     1+35       0.4920      0.03  Q         |          |          |        V |
     1+40       0.4920      0.01  Q         |          |          |         V
  ---------------------------------------------------------------------
```

APPENDIX G.4: AREA “B” – EXISTING CONDITION HYDROGRAPH CALCULATIONS 2–YEAR

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: BUH224EXIST242.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "B"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
2 YEAR - 24 HOUR
FN: BUH224EXIST

Drainage Area = 22.17(Ac.) = 0.035 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 22.17(Ac.) = 0.035 Sq. Mi.
Length along longest watercourse = 1554.00(Ft.)
Length along longest watercourse measured to centroid = 665.00(Ft.)
Length along longest watercourse = 0.294 Mi.
Length along longest watercourse measured to centroid = 0.126 Mi.
Difference in elevation = 68.00(Ft.)
Slope along watercourse = 231.0425 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.085 Hr.
Lag time = 5.12 Min.
25% of lag time = 1.28 Min.
40% of lag time = 2.05 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	2.50	55.43

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	8.00	177.36

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 2.500(In)
Area Averaged 100-Year Rainfall = 8.000(In)

Point rain (area averaged) = 2.500(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.500(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.170	71.00	0.000

Total Area Entered = 22.17(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
71.0	52.2	0.550	0.000	0.550	1.000	0.550
					Sum (F) =	0.550

Area averaged mean soil loss (F) (In/Hr) = 0.550
Minimum soil loss rate ((In/Hr)) = 0.275
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	97.593	18.462	4.125
2	0.167	195.186	48.190	10.767
3	0.250	292.779	16.014	3.578
4	0.333	390.372	7.192	1.607
5	0.417	487.965	4.075	0.911
6	0.500	585.559	2.644	0.591
7	0.583	683.152	1.677	0.375
8	0.667	780.745	1.065	0.238
9	0.750	878.338	0.681	0.152
		Sum = 100.000	Sum=	22.343

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.020	(0.974)	0.018	0.002
2	0.17	0.07	0.020	(0.970)	0.018	0.002
3	0.25	0.07	0.020	(0.967)	0.018	0.002
4	0.33	0.10	0.030	(0.963)	0.027	0.003
5	0.42	0.10	0.030	(0.959)	0.027	0.003
6	0.50	0.10	0.030	(0.955)	0.027	0.003
7	0.58	0.10	0.030	(0.952)	0.027	0.003
8	0.67	0.10	0.030	(0.948)	0.027	0.003
9	0.75	0.10	0.030	(0.944)	0.027	0.003
10	0.83	0.13	0.040	(0.941)	0.036	0.004
11	0.92	0.13	0.040	(0.937)	0.036	0.004
12	1.00	0.13	0.040	(0.933)	0.036	0.004
13	1.08	0.10	0.030	(0.929)	0.027	0.003
14	1.17	0.10	0.030	(0.926)	0.027	0.003
15	1.25	0.10	0.030	(0.922)	0.027	0.003
16	1.33	0.10	0.030	(0.918)	0.027	0.003

17	1.42	0.10	0.030	(0.915)	0.027	0.003
18	1.50	0.10	0.030	(0.911)	0.027	0.003
19	1.58	0.10	0.030	(0.908)	0.027	0.003
20	1.67	0.10	0.030	(0.904)	0.027	0.003
21	1.75	0.10	0.030	(0.900)	0.027	0.003
22	1.83	0.13	0.040	(0.897)	0.036	0.004
23	1.92	0.13	0.040	(0.893)	0.036	0.004
24	2.00	0.13	0.040	(0.889)	0.036	0.004
25	2.08	0.13	0.040	(0.886)	0.036	0.004
26	2.17	0.13	0.040	(0.882)	0.036	0.004
27	2.25	0.13	0.040	(0.879)	0.036	0.004
28	2.33	0.13	0.040	(0.875)	0.036	0.004
29	2.42	0.13	0.040	(0.872)	0.036	0.004
30	2.50	0.13	0.040	(0.868)	0.036	0.004
31	2.58	0.17	0.050	(0.864)	0.045	0.005
32	2.67	0.17	0.050	(0.861)	0.045	0.005
33	2.75	0.17	0.050	(0.857)	0.045	0.005
34	2.83	0.17	0.050	(0.854)	0.045	0.005
35	2.92	0.17	0.050	(0.850)	0.045	0.005
36	3.00	0.17	0.050	(0.847)	0.045	0.005
37	3.08	0.17	0.050	(0.843)	0.045	0.005
38	3.17	0.17	0.050	(0.840)	0.045	0.005
39	3.25	0.17	0.050	(0.836)	0.045	0.005
40	3.33	0.17	0.050	(0.833)	0.045	0.005
41	3.42	0.17	0.050	(0.829)	0.045	0.005
42	3.50	0.17	0.050	(0.826)	0.045	0.005
43	3.58	0.17	0.050	(0.822)	0.045	0.005
44	3.67	0.17	0.050	(0.819)	0.045	0.005
45	3.75	0.17	0.050	(0.815)	0.045	0.005
46	3.83	0.20	0.060	(0.812)	0.054	0.006
47	3.92	0.20	0.060	(0.809)	0.054	0.006
48	4.00	0.20	0.060	(0.805)	0.054	0.006
49	4.08	0.20	0.060	(0.802)	0.054	0.006
50	4.17	0.20	0.060	(0.798)	0.054	0.006
51	4.25	0.20	0.060	(0.795)	0.054	0.006
52	4.33	0.23	0.070	(0.792)	0.063	0.007
53	4.42	0.23	0.070	(0.788)	0.063	0.007
54	4.50	0.23	0.070	(0.785)	0.063	0.007
55	4.58	0.23	0.070	(0.781)	0.063	0.007
56	4.67	0.23	0.070	(0.778)	0.063	0.007
57	4.75	0.23	0.070	(0.775)	0.063	0.007
58	4.83	0.27	0.080	(0.771)	0.072	0.008
59	4.92	0.27	0.080	(0.768)	0.072	0.008
60	5.00	0.27	0.080	(0.765)	0.072	0.008
61	5.08	0.20	0.060	(0.761)	0.054	0.006
62	5.17	0.20	0.060	(0.758)	0.054	0.006
63	5.25	0.20	0.060	(0.755)	0.054	0.006
64	5.33	0.23	0.070	(0.751)	0.063	0.007
65	5.42	0.23	0.070	(0.748)	0.063	0.007
66	5.50	0.23	0.070	(0.745)	0.063	0.007
67	5.58	0.27	0.080	(0.742)	0.072	0.008
68	5.67	0.27	0.080	(0.738)	0.072	0.008
69	5.75	0.27	0.080	(0.735)	0.072	0.008
70	5.83	0.27	0.080	(0.732)	0.072	0.008
71	5.92	0.27	0.080	(0.729)	0.072	0.008
72	6.00	0.27	0.080	(0.725)	0.072	0.008
73	6.08	0.30	0.090	(0.722)	0.081	0.009
74	6.17	0.30	0.090	(0.719)	0.081	0.009
75	6.25	0.30	0.090	(0.716)	0.081	0.009
76	6.33	0.30	0.090	(0.713)	0.081	0.009
77	6.42	0.30	0.090	(0.709)	0.081	0.009
78	6.50	0.30	0.090	(0.706)	0.081	0.009
79	6.58	0.33	0.100	(0.703)	0.090	0.010

80	6.67	0.33	0.100	(0.700)	0.090	0.010
81	6.75	0.33	0.100	(0.697)	0.090	0.010
82	6.83	0.33	0.100	(0.694)	0.090	0.010
83	6.92	0.33	0.100	(0.690)	0.090	0.010
84	7.00	0.33	0.100	(0.687)	0.090	0.010
85	7.08	0.33	0.100	(0.684)	0.090	0.010
86	7.17	0.33	0.100	(0.681)	0.090	0.010
87	7.25	0.33	0.100	(0.678)	0.090	0.010
88	7.33	0.37	0.110	(0.675)	0.099	0.011
89	7.42	0.37	0.110	(0.672)	0.099	0.011
90	7.50	0.37	0.110	(0.669)	0.099	0.011
91	7.58	0.40	0.120	(0.666)	0.108	0.012
92	7.67	0.40	0.120	(0.663)	0.108	0.012
93	7.75	0.40	0.120	(0.659)	0.108	0.012
94	7.83	0.43	0.130	(0.656)	0.117	0.013
95	7.92	0.43	0.130	(0.653)	0.117	0.013
96	8.00	0.43	0.130	(0.650)	0.117	0.013
97	8.08	0.50	0.150	(0.647)	0.135	0.015
98	8.17	0.50	0.150	(0.644)	0.135	0.015
99	8.25	0.50	0.150	(0.641)	0.135	0.015
100	8.33	0.50	0.150	(0.638)	0.135	0.015
101	8.42	0.50	0.150	(0.635)	0.135	0.015
102	8.50	0.50	0.150	(0.632)	0.135	0.015
103	8.58	0.53	0.160	(0.629)	0.144	0.016
104	8.67	0.53	0.160	(0.626)	0.144	0.016
105	8.75	0.53	0.160	(0.624)	0.144	0.016
106	8.83	0.57	0.170	(0.621)	0.153	0.017
107	8.92	0.57	0.170	(0.618)	0.153	0.017
108	9.00	0.57	0.170	(0.615)	0.153	0.017
109	9.08	0.63	0.190	(0.612)	0.171	0.019
110	9.17	0.63	0.190	(0.609)	0.171	0.019
111	9.25	0.63	0.190	(0.606)	0.171	0.019
112	9.33	0.67	0.200	(0.603)	0.180	0.020
113	9.42	0.67	0.200	(0.600)	0.180	0.020
114	9.50	0.67	0.200	(0.597)	0.180	0.020
115	9.58	0.70	0.210	(0.595)	0.189	0.021
116	9.67	0.70	0.210	(0.592)	0.189	0.021
117	9.75	0.70	0.210	(0.589)	0.189	0.021
118	9.83	0.73	0.220	(0.586)	0.198	0.022
119	9.92	0.73	0.220	(0.583)	0.198	0.022
120	10.00	0.73	0.220	(0.580)	0.198	0.022
121	10.08	0.50	0.150	(0.578)	0.135	0.015
122	10.17	0.50	0.150	(0.575)	0.135	0.015
123	10.25	0.50	0.150	(0.572)	0.135	0.015
124	10.33	0.50	0.150	(0.569)	0.135	0.015
125	10.42	0.50	0.150	(0.566)	0.135	0.015
126	10.50	0.50	0.150	(0.564)	0.135	0.015
127	10.58	0.67	0.200	(0.561)	0.180	0.020
128	10.67	0.67	0.200	(0.558)	0.180	0.020
129	10.75	0.67	0.200	(0.555)	0.180	0.020
130	10.83	0.67	0.200	(0.553)	0.180	0.020
131	10.92	0.67	0.200	(0.550)	0.180	0.020
132	11.00	0.67	0.200	(0.547)	0.180	0.020
133	11.08	0.63	0.190	(0.545)	0.171	0.019
134	11.17	0.63	0.190	(0.542)	0.171	0.019
135	11.25	0.63	0.190	(0.539)	0.171	0.019
136	11.33	0.63	0.190	(0.537)	0.171	0.019
137	11.42	0.63	0.190	(0.534)	0.171	0.019
138	11.50	0.63	0.190	(0.531)	0.171	0.019
139	11.58	0.57	0.170	(0.529)	0.153	0.017
140	11.67	0.57	0.170	(0.526)	0.153	0.017
141	11.75	0.57	0.170	(0.523)	0.153	0.017
142	11.83	0.60	0.180	(0.521)	0.162	0.018

143	11.92	0.60	0.180	(0.518)	0.162	0.018
144	12.00	0.60	0.180	(0.516)	0.162	0.018
145	12.08	0.83	0.250	(0.513)	0.225	0.025
146	12.17	0.83	0.250	(0.510)	0.225	0.025
147	12.25	0.83	0.250	(0.508)	0.225	0.025
148	12.33	0.87	0.260	(0.505)	0.234	0.026
149	12.42	0.87	0.260	(0.503)	0.234	0.026
150	12.50	0.87	0.260	(0.500)	0.234	0.026
151	12.58	0.93	0.280	(0.498)	0.252	0.028
152	12.67	0.93	0.280	(0.495)	0.252	0.028
153	12.75	0.93	0.280	(0.493)	0.252	0.028
154	12.83	0.97	0.290	(0.490)	0.261	0.029
155	12.92	0.97	0.290	(0.488)	0.261	0.029
156	13.00	0.97	0.290	(0.485)	0.261	0.029
157	13.08	1.13	0.340	(0.483)	0.306	0.034
158	13.17	1.13	0.340	(0.480)	0.306	0.034
159	13.25	1.13	0.340	(0.478)	0.306	0.034
160	13.33	1.13	0.340	(0.476)	0.306	0.034
161	13.42	1.13	0.340	(0.473)	0.306	0.034
162	13.50	1.13	0.340	(0.471)	0.306	0.034
163	13.58	0.77	0.230	(0.468)	0.207	0.023
164	13.67	0.77	0.230	(0.466)	0.207	0.023
165	13.75	0.77	0.230	(0.464)	0.207	0.023
166	13.83	0.77	0.230	(0.461)	0.207	0.023
167	13.92	0.77	0.230	(0.459)	0.207	0.023
168	14.00	0.77	0.230	(0.456)	0.207	0.023
169	14.08	0.90	0.270	(0.454)	0.243	0.027
170	14.17	0.90	0.270	(0.452)	0.243	0.027
171	14.25	0.90	0.270	(0.450)	0.243	0.027
172	14.33	0.87	0.260	(0.447)	0.234	0.026
173	14.42	0.87	0.260	(0.445)	0.234	0.026
174	14.50	0.87	0.260	(0.443)	0.234	0.026
175	14.58	0.87	0.260	(0.440)	0.234	0.026
176	14.67	0.87	0.260	(0.438)	0.234	0.026
177	14.75	0.87	0.260	(0.436)	0.234	0.026
178	14.83	0.83	0.250	(0.434)	0.225	0.025
179	14.92	0.83	0.250	(0.431)	0.225	0.025
180	15.00	0.83	0.250	(0.429)	0.225	0.025
181	15.08	0.80	0.240	(0.427)	0.216	0.024
182	15.17	0.80	0.240	(0.425)	0.216	0.024
183	15.25	0.80	0.240	(0.423)	0.216	0.024
184	15.33	0.77	0.230	(0.420)	0.207	0.023
185	15.42	0.77	0.230	(0.418)	0.207	0.023
186	15.50	0.77	0.230	(0.416)	0.207	0.023
187	15.58	0.63	0.190	(0.414)	0.171	0.019
188	15.67	0.63	0.190	(0.412)	0.171	0.019
189	15.75	0.63	0.190	(0.410)	0.171	0.019
190	15.83	0.63	0.190	(0.408)	0.171	0.019
191	15.92	0.63	0.190	(0.406)	0.171	0.019
192	16.00	0.63	0.190	(0.404)	0.171	0.019
193	16.08	0.13	0.040	(0.402)	0.036	0.004
194	16.17	0.13	0.040	(0.399)	0.036	0.004
195	16.25	0.13	0.040	(0.397)	0.036	0.004
196	16.33	0.13	0.040	(0.395)	0.036	0.004
197	16.42	0.13	0.040	(0.393)	0.036	0.004
198	16.50	0.13	0.040	(0.391)	0.036	0.004
199	16.58	0.10	0.030	(0.389)	0.027	0.003
200	16.67	0.10	0.030	(0.387)	0.027	0.003
201	16.75	0.10	0.030	(0.385)	0.027	0.003
202	16.83	0.10	0.030	(0.383)	0.027	0.003
203	16.92	0.10	0.030	(0.382)	0.027	0.003
204	17.00	0.10	0.030	(0.380)	0.027	0.003
205	17.08	0.17	0.050	(0.378)	0.045	0.005

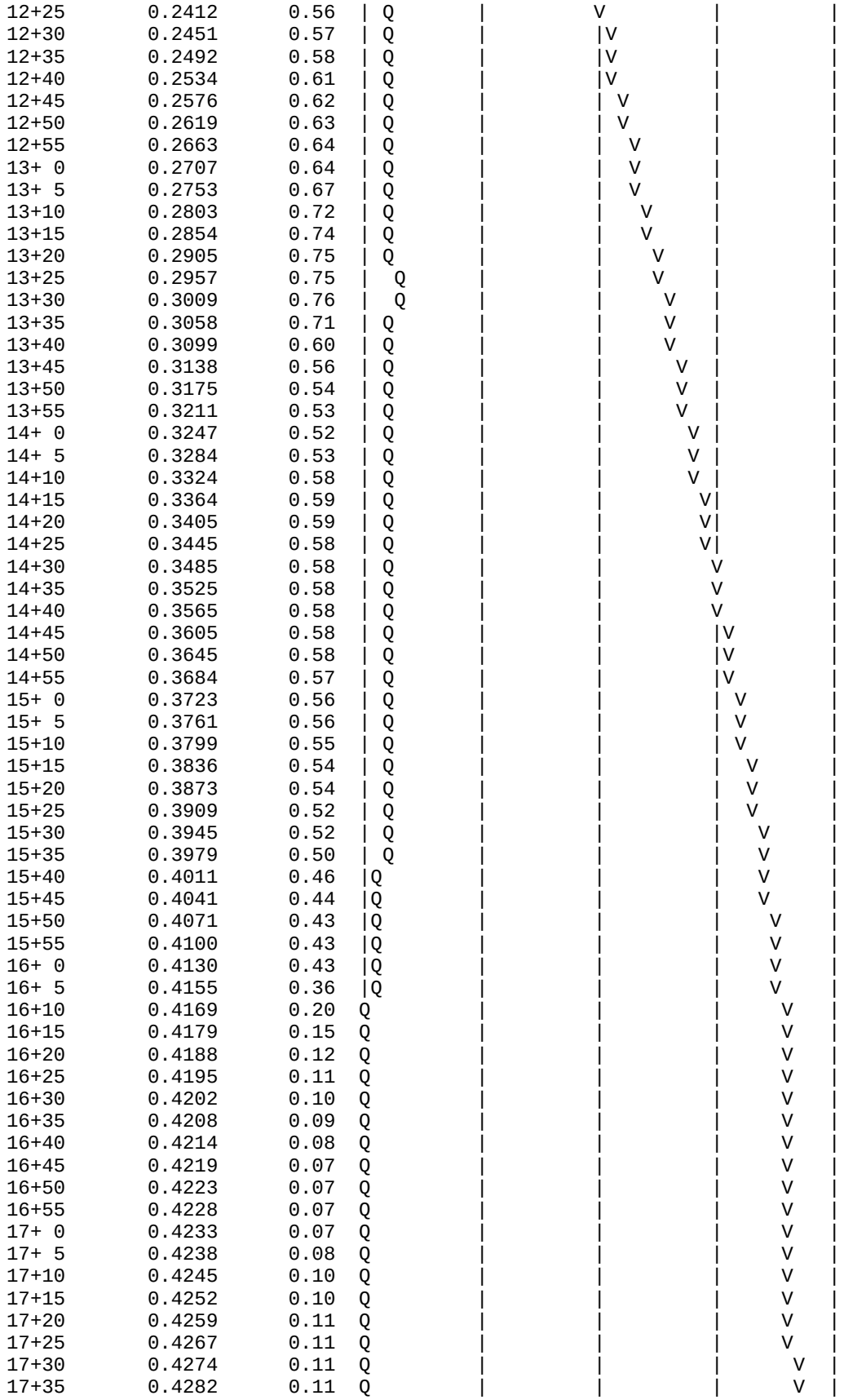
206	17.17	0.17	0.050	(0.376)	0.045	0.005
207	17.25	0.17	0.050	(0.374)	0.045	0.005
208	17.33	0.17	0.050	(0.372)	0.045	0.005
209	17.42	0.17	0.050	(0.370)	0.045	0.005
210	17.50	0.17	0.050	(0.368)	0.045	0.005
211	17.58	0.17	0.050	(0.366)	0.045	0.005
212	17.67	0.17	0.050	(0.365)	0.045	0.005
213	17.75	0.17	0.050	(0.363)	0.045	0.005
214	17.83	0.13	0.040	(0.361)	0.036	0.004
215	17.92	0.13	0.040	(0.359)	0.036	0.004
216	18.00	0.13	0.040	(0.357)	0.036	0.004
217	18.08	0.13	0.040	(0.356)	0.036	0.004
218	18.17	0.13	0.040	(0.354)	0.036	0.004
219	18.25	0.13	0.040	(0.352)	0.036	0.004
220	18.33	0.13	0.040	(0.350)	0.036	0.004
221	18.42	0.13	0.040	(0.349)	0.036	0.004
222	18.50	0.13	0.040	(0.347)	0.036	0.004
223	18.58	0.10	0.030	(0.345)	0.027	0.003
224	18.67	0.10	0.030	(0.344)	0.027	0.003
225	18.75	0.10	0.030	(0.342)	0.027	0.003
226	18.83	0.07	0.020	(0.340)	0.018	0.002
227	18.92	0.07	0.020	(0.339)	0.018	0.002
228	19.00	0.07	0.020	(0.337)	0.018	0.002
229	19.08	0.10	0.030	(0.336)	0.027	0.003
230	19.17	0.10	0.030	(0.334)	0.027	0.003
231	19.25	0.10	0.030	(0.333)	0.027	0.003
232	19.33	0.13	0.040	(0.331)	0.036	0.004
233	19.42	0.13	0.040	(0.329)	0.036	0.004
234	19.50	0.13	0.040	(0.328)	0.036	0.004
235	19.58	0.10	0.030	(0.326)	0.027	0.003
236	19.67	0.10	0.030	(0.325)	0.027	0.003
237	19.75	0.10	0.030	(0.323)	0.027	0.003
238	19.83	0.07	0.020	(0.322)	0.018	0.002
239	19.92	0.07	0.020	(0.321)	0.018	0.002
240	20.00	0.07	0.020	(0.319)	0.018	0.002
241	20.08	0.10	0.030	(0.318)	0.027	0.003
242	20.17	0.10	0.030	(0.316)	0.027	0.003
243	20.25	0.10	0.030	(0.315)	0.027	0.003
244	20.33	0.10	0.030	(0.314)	0.027	0.003
245	20.42	0.10	0.030	(0.312)	0.027	0.003
246	20.50	0.10	0.030	(0.311)	0.027	0.003
247	20.58	0.10	0.030	(0.310)	0.027	0.003
248	20.67	0.10	0.030	(0.308)	0.027	0.003
249	20.75	0.10	0.030	(0.307)	0.027	0.003
250	20.83	0.07	0.020	(0.306)	0.018	0.002
251	20.92	0.07	0.020	(0.305)	0.018	0.002
252	21.00	0.07	0.020	(0.303)	0.018	0.002
253	21.08	0.10	0.030	(0.302)	0.027	0.003
254	21.17	0.10	0.030	(0.301)	0.027	0.003
255	21.25	0.10	0.030	(0.300)	0.027	0.003
256	21.33	0.07	0.020	(0.299)	0.018	0.002
257	21.42	0.07	0.020	(0.297)	0.018	0.002
258	21.50	0.07	0.020	(0.296)	0.018	0.002
259	21.58	0.10	0.030	(0.295)	0.027	0.003
260	21.67	0.10	0.030	(0.294)	0.027	0.003
261	21.75	0.10	0.030	(0.293)	0.027	0.003
262	21.83	0.07	0.020	(0.292)	0.018	0.002
263	21.92	0.07	0.020	(0.291)	0.018	0.002
264	22.00	0.07	0.020	(0.290)	0.018	0.002
265	22.08	0.10	0.030	(0.289)	0.027	0.003
266	22.17	0.10	0.030	(0.288)	0.027	0.003
267	22.25	0.10	0.030	(0.287)	0.027	0.003
268	22.33	0.07	0.020	(0.286)	0.018	0.002

```
269  22.42     0.07      0.020       (  0.286)       0.018        0.002
270  22.50     0.07      0.020       (  0.285)       0.018        0.002
271  22.58     0.07      0.020       (  0.284)       0.018        0.002
272  22.67     0.07      0.020       (  0.283)       0.018        0.002
273  22.75     0.07      0.020       (  0.282)       0.018        0.002
274  22.83     0.07      0.020       (  0.282)       0.018        0.002
275  22.92     0.07      0.020       (  0.281)       0.018        0.002
276  23.00     0.07      0.020       (  0.280)       0.018        0.002
277  23.08     0.07      0.020       (  0.280)       0.018        0.002
278  23.17     0.07      0.020       (  0.279)       0.018        0.002
279  23.25     0.07      0.020       (  0.278)       0.018        0.002
280  23.33     0.07      0.020       (  0.278)       0.018        0.002
281  23.42     0.07      0.020       (  0.277)       0.018        0.002
282  23.50     0.07      0.020       (  0.277)       0.018        0.002
283  23.58     0.07      0.020       (  0.276)       0.018        0.002
284  23.67     0.07      0.020       (  0.276)       0.018        0.002
285  23.75     0.07      0.020       (  0.276)       0.018        0.002
286  23.83     0.07      0.020       (  0.275)       0.018        0.002
287  23.92     0.07      0.020       (  0.275)       0.018        0.002
288  24.00     0.07      0.020       (  0.275)       0.018        0.002
            (Loss Rate Not Used)
    Sum =     100.0                                  Sum =     3.0
     Flood volume = Effective rainfall      0.25(In)
      times area      22.2(Ac.)/[(In)/(Ft.)] =       0.5(Ac.Ft)
     Total soil loss =      2.25(In)
     Total soil loss =     4.157(Ac.Ft)
     Total rainfall =      2.50(In)
     Flood volume =       20118.4 Cubic Feet
     Total soil loss =      181065.6 Cubic Feet
     ---------------------------------------------------------------------
      Peak flow rate of this hydrograph =      0.756(CFS)
     ---------------------------------------------------------------------
     +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
     ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

     ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0001      0.01  Q         |         |         |         |
   0+10       0.0003      0.03  Q         |         |         |         |
   0+15       0.0005      0.04  Q         |         |         |         |
   0+20       0.0008      0.04  Q         |         |         |         |
   0+25       0.0012      0.06  Q         |         |         |         |
   0+30       0.0016      0.06  Q         |         |         |         |
   0+35       0.0021      0.06  Q         |         |         |         |
   0+40       0.0025      0.07  Q         |         |         |         |
   0+45       0.0030      0.07  Q         |         |         |         |
   0+50       0.0035      0.07  Q         |         |         |         |
   0+55       0.0040      0.08  Q         |         |         |         |
   1+ 0       0.0046      0.09  Q         |         |         |         |
   1+ 5       0.0052      0.08  Q         |         |         |         |
   1+10       0.0057      0.07  Q         |         |         |         |
   1+15       0.0062      0.07  Q         |         |         |         |
   1+20       0.0067      0.07  Q         |         |         |         |
   1+25       0.0071      0.07  Q         |         |         |         |
   1+30       0.0076      0.07  Q         |         |         |         |
   1+35       0.0081      0.07  Q         |         |         |         |
   1+40       0.0085      0.07  Q         |         |         |         |
   1+45       0.0090      0.07  Q         |         |         |         |
   1+50       0.0095      0.07  Q         |         |         |         |
```

1+55	0.0100	0.08	Q	|	|	|	|
2+ 0	0.0106	0.09	Q	|	|	|	|
2+ 5	0.0112	0.09	Q	|	|	|	|
2+10	0.0118	0.09	QV	|	|	|	|
2+15	0.0124	0.09	QV	|	|	|	|
2+20	0.0131	0.09	QV	|	|	|	|
2+25	0.0137	0.09	QV	|	|	|	|
2+30	0.0143	0.09	QV	|	|	|	|
2+35	0.0149	0.09	QV	|	|	|	|
2+40	0.0157	0.10	QV	|	|	|	|
2+45	0.0164	0.11	QV	|	|	|	|
2+50	0.0172	0.11	QV	|	|	|	|
2+55	0.0179	0.11	QV	|	|	|	|
3+ 0	0.0187	0.11	QV	|	|	|	|
3+ 5	0.0194	0.11	QV	|	|	|	|
3+10	0.0202	0.11	QV	|	|	|	|
3+15	0.0210	0.11	QV	|	|	|	|
3+20	0.0218	0.11	QV	|	|	|	|
3+25	0.0225	0.11	QV	|	|	|	|
3+30	0.0233	0.11	Q V	|	|	|	|
3+35	0.0241	0.11	Q V	|	|	|	|
3+40	0.0248	0.11	Q V	|	|	|	|
3+45	0.0256	0.11	Q V	|	|	|	|
3+50	0.0264	0.12	Q V	|	|	|	|
3+55	0.0273	0.13	Q V	|	|	|	|
4+ 0	0.0282	0.13	Q V	|	|	|	|
4+ 5	0.0291	0.13	Q V	|	|	|	|
4+10	0.0300	0.13	Q V	|	|	|	|
4+15	0.0309	0.13	Q V	|	|	|	|
4+20	0.0319	0.14	Q V	|	|	|	|
4+25	0.0329	0.15	Q V	|	|	|	|
4+30	0.0339	0.15	Q V	|	|	|	|
4+35	0.0350	0.15	Q V	|	|	|	|
4+40	0.0361	0.16	Q V	|	|	|	|
4+45	0.0371	0.16	Q V	|	|	|	|
4+50	0.0382	0.16	Q V	|	|	|	|
4+55	0.0394	0.17	Q V	|	|	|	|
5+ 0	0.0406	0.17	Q V	|	|	|	|
5+ 5	0.0418	0.17	Q V	|	|	|	|
5+10	0.0428	0.15	Q V	|	|	|	|
5+15	0.0438	0.14	Q V	|	|	|	|
5+20	0.0448	0.14	Q V	|	|	|	|
5+25	0.0458	0.15	Q V	|	|	|	|
5+30	0.0469	0.15	Q V	|	|	|	|
5+35	0.0480	0.16	Q V	|	|	|	|
5+40	0.0491	0.17	Q V	|	|	|	|
5+45	0.0503	0.17	Q V	|	|	|	|
5+50	0.0515	0.18	Q V	|	|	|	|
5+55	0.0528	0.18	Q V	|	|	|	|
6+ 0	0.0540	0.18	Q V	|	|	|	|
6+ 5	0.0552	0.18	Q V	|	|	|	|
6+10	0.0566	0.19	Q V	|	|	|	|
6+15	0.0579	0.20	Q V	|	|	|	|
6+20	0.0593	0.20	Q V	|	|	|	|
6+25	0.0607	0.20	Q V	|	|	|	|
6+30	0.0621	0.20	Q V	|	|	|	|
6+35	0.0635	0.20	Q V	|	|	|	|
6+40	0.0650	0.22	Q V	|	|	|	|
6+45	0.0665	0.22	Q V	|	|	|	|
6+50	0.0680	0.22	Q V	|	|	|	|
6+55	0.0695	0.22	Q V	|	|	|	|
7+ 0	0.0711	0.22	Q V	|	|	|	|
7+ 5	0.0726	0.22	Q V	|	|	|	|

```
 7+10       0.0741      0.22  Q     V   |          |          |          |
 7+15       0.0757      0.22  Q     V   |          |          |          |
 7+20       0.0772      0.23  Q     V   |          |          |          |
 7+25       0.0789      0.24  Q     V   |          |          |          |
 7+30       0.0806      0.24  Q     V   |          |          |          |
 7+35       0.0823      0.25  Q      V  |          |          |          |
 7+40       0.0840      0.26  |Q     V  |          |          |          |
 7+45       0.0859      0.26  |Q     V  |          |          |          |
 7+50       0.0877      0.27  |Q     V  |          |          |          |
 7+55       0.0897      0.28  |Q     V  |          |          |          |
 8+ 0       0.0916      0.29  |Q     V  |          |          |          |
 8+ 5       0.0937      0.30  |Q      V |          |          |          |
 8+10       0.0959      0.32  |Q      V |          |          |          |
 8+15       0.0981      0.33  |Q      V |          |          |          |
 8+20       0.1004      0.33  |Q      V |          |          |          |
 8+25       0.1027      0.33  |Q      V |          |          |          |
 8+30       0.1050      0.33  |Q       V|          |          |          |
 8+35       0.1073      0.34  |Q       V|          |          |          |
 8+40       0.1097      0.35  |Q       V|          |          |          |
 8+45       0.1122      0.35  |Q       V|          |          |          |
 8+50       0.1146      0.36  |Q       V|          |          |          |
 8+55       0.1172      0.37  |Q        V          |          |          |
 9+ 0       0.1198      0.38  |Q        V          |          |          |
 9+ 5       0.1224      0.39  |Q        V          |          |          |
 9+10       0.1252      0.41  |Q        V          |          |          |
 9+15       0.1281      0.42  |Q        |V         |          |          |
 9+20       0.1310      0.42  |Q        |V         |          |          |
 9+25       0.1340      0.44  |Q        |V         |          |          |
 9+30       0.1371      0.44  |Q        |V         |          |          |
 9+35       0.1402      0.45  |Q        | V        |          |          |
 9+40       0.1433      0.46  |Q        | V        |          |          |
 9+45       0.1465      0.46  |Q        | V        |          |          |
 9+50       0.1498      0.47  |Q        | V        |          |          |
 9+55       0.1531      0.48  |Q        |  V       |          |          |
10+ 0       0.1565      0.49  |Q        |  V       |          |          |
10+ 5       0.1596      0.46  |Q        |  V       |          |          |
10+10       0.1623      0.39  |Q        |   V      |          |          |
10+15       0.1648      0.36  |Q        |   V      |          |          |
10+20       0.1672      0.35  |Q        |   V      |          |          |
10+25       0.1696      0.34  |Q        |   V      |          |          |
10+30       0.1719      0.34  |Q        |   V      |          |          |
10+35       0.1744      0.36  |Q        |    V     |          |          |
10+40       0.1772      0.41  |Q        |    V     |          |          |
10+45       0.1802      0.43  |Q        |    V     |          |          |
10+50       0.1832      0.44  |Q        |    V     |          |          |
10+55       0.1862      0.44  |Q        |     V    |          |          |
11+ 0       0.1892      0.44  |Q        |     V    |          |          |
11+ 5       0.1923      0.44  |Q        |     V    |          |          |
11+10       0.1953      0.43  |Q        |     V    |          |          |
11+15       0.1982      0.43  |Q        |      V   |          |          |
11+20       0.2011      0.43  |Q        |      V   |          |          |
11+25       0.2041      0.43  |Q        |      V   |          |          |
11+30       0.2070      0.43  |Q        |      V   |          |          |
11+35       0.2099      0.42  |Q        |       V  |          |          |
11+40       0.2126      0.40  |Q        |       V  |          |          |
11+45       0.2153      0.39  |Q        |       V  |          |          |
11+50       0.2180      0.39  |Q        |       V  |          |          |
11+55       0.2207      0.40  |Q        |        V |          |          |
12+ 0       0.2234      0.40  |Q        |        V |          |          |
12+ 5       0.2264      0.43  |Q        |        V |          |          |
12+10       0.2299      0.51  | Q       |        V |          |          |
12+15       0.2335      0.53  | Q       |         V          |          |
12+20       0.2373      0.55  | Q       |         V          |          |
```



17+40	0.4290	0.11	Q	|	|	|	V |
17+45	0.4297	0.11	Q	|	|	|	V |
17+50	0.4305	0.11	Q	|	|	|	V |
17+55	0.4311	0.10	Q	|	|	|	V |
18+ 0	0.4318	0.09	Q	|	|	|	V |
18+ 5	0.4324	0.09	Q	|	|	|	V |
18+10	0.4330	0.09	Q	|	|	|	V |
18+15	0.4337	0.09	Q	|	|	|	V |
18+20	0.4343	0.09	Q	|	|	|	V |
18+25	0.4349	0.09	Q	|	|	|	V |
18+30	0.4355	0.09	Q	|	|	|	V |
18+35	0.4361	0.09	Q	|	|	|	V |
18+40	0.4366	0.07	Q	|	|	|	V |
18+45	0.4371	0.07	Q	|	|	|	V |
18+50	0.4375	0.07	Q	|	|	|	V |
18+55	0.4379	0.05	Q	|	|	|	V |
19+ 0	0.4382	0.05	Q	|	|	|	V |
19+ 5	0.4386	0.05	Q	|	|	|	V |
19+10	0.4390	0.06	Q	|	|	|	V |
19+15	0.4395	0.06	Q	|	|	|	V |
19+20	0.4399	0.07	Q	|	|	|	V |
19+25	0.4405	0.08	Q	|	|	|	V |
19+30	0.4411	0.08	Q	|	|	|	V |
19+35	0.4417	0.08	Q	|	|	|	V |
19+40	0.4422	0.07	Q	|	|	|	V |
19+45	0.4426	0.07	Q	|	|	|	V |
19+50	0.4431	0.06	Q	|	|	|	V |
19+55	0.4435	0.05	Q	|	|	|	V |
20+ 0	0.4438	0.05	Q	|	|	|	V |
20+ 5	0.4441	0.05	Q	|	|	|	V |
20+10	0.4446	0.06	Q	|	|	|	V |
20+15	0.4450	0.06	Q	|	|	|	V |
20+20	0.4455	0.07	Q	|	|	|	V |
20+25	0.4459	0.07	Q	|	|	|	V |
20+30	0.4464	0.07	Q	|	|	|	V |
20+35	0.4468	0.07	Q	|	|	|	V |
20+40	0.4473	0.07	Q	|	|	|	V |
20+45	0.4477	0.07	Q	|	|	|	V |
20+50	0.4482	0.06	Q	|	|	|	V |
20+55	0.4485	0.05	Q	|	|	|	V |
21+ 0	0.4489	0.05	Q	|	|	|	V |
21+ 5	0.4492	0.05	Q	|	|	|	V |
21+10	0.4496	0.06	Q	|	|	|	V |
21+15	0.4501	0.06	Q	|	|	|	V |
21+20	0.4505	0.06	Q	|	|	|	V|
21+25	0.4509	0.05	Q	|	|	|	V|
21+30	0.4512	0.05	Q	|	|	|	V|
21+35	0.4515	0.05	Q	|	|	|	V|
21+40	0.4520	0.06	Q	|	|	|	V|
21+45	0.4524	0.06	Q	|	|	|	V|
21+50	0.4528	0.06	Q	|	|	|	V|
21+55	0.4532	0.05	Q	|	|	|	V|
22+ 0	0.4535	0.05	Q	|	|	|	V|
22+ 5	0.4538	0.05	Q	|	|	|	V|
22+10	0.4543	0.06	Q	|	|	|	V|
22+15	0.4547	0.06	Q	|	|	|	V|
22+20	0.4551	0.06	Q	|	|	|	V|
22+25	0.4555	0.05	Q	|	|	|	V|
22+30	0.4558	0.05	Q	|	|	|	V|
22+35	0.4561	0.05	Q	|	|	|	V|
22+40	0.4564	0.05	Q	|	|	|	V|
22+45	0.4568	0.05	Q	|	|	|	V|
22+50	0.4571	0.05	Q	|	|	|	V|

22+55	0.4574	0.04	Q	|	|	|	V|
23+ 0	0.4577	0.04	Q	|	|	|	V|
23+ 5	0.4580	0.04	Q	|	|	|	V|
23+10	0.4583	0.04	Q	|	|	|	V|
23+15	0.4586	0.04	Q	|	|	|	V|
23+20	0.4589	0.04	Q	|	|	|	V|
23+25	0.4592	0.04	Q	|	|	|	V|
23+30	0.4595	0.04	Q	|	|	|	V|
23+35	0.4598	0.04	Q	|	|	|	V|
23+40	0.4601	0.04	Q	|	|	|	V|
23+45	0.4605	0.04	Q	|	|	|	V|
23+50	0.4608	0.04	Q	|	|	|	V|
23+55	0.4611	0.04	Q	|	|	|	V|
24+ 0	0.4614	0.04	Q	|	|	|	V|
24+ 5	0.4616	0.04	Q	|	|	|	V|
24+10	0.4617	0.01	Q	|	|	|	V|
24+15	0.4618	0.01	Q	|	|	|	V|
24+20	0.4618	0.00	Q	|	|	|	V|
24+25	0.4618	0.00	Q	|	|	|	V|
24+30	0.4618	0.00	Q	|	|	|	V|
24+35	0.4619	0.00	Q	|	|	|	V|
24+40	0.4619	0.00	Q	|	|	|	V

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: BUH26EXIST62.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "B"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
2 YEAR - 6 HOUR
FN: BUH26EXIST

Drainage Area = 22.17(Ac.) = 0.035 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 22.17(Ac.) = 0.035 Sq. Mi.
Length along longest watercourse = 1554.00(Ft.)
Length along longest watercourse measured to centroid = 665.00(Ft.)
Length along longest watercourse = 0.294 Mi.
Length along longest watercourse measured to centroid = 0.126 Mi.
Difference in elevation = 68.00(Ft.)
Slope along watercourse = 231.0425 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.085 Hr.
Lag time = 5.12 Min.
25% of lag time = 1.28 Min.
40% of lag time = 2.05 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	1.40	31.04

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	3.00	66.51

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.400(In)
Area Averaged 100-Year Rainfall = 3.000(In)

Point rain (area averaged) = 1.400(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.400(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.170	71.00	0.000

Total Area Entered = 22.17(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
71.0	52.2	0.550	0.000	0.550	1.000	0.550
					Sum (F) =	0.550

Area averaged mean soil loss (F) (In/Hr) = 0.550
Minimum soil loss rate ((In/Hr)) = 0.275
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	97.593	18.462	4.125
2	0.167	195.186	48.190	10.767
3	0.250	292.779	16.014	3.578
4	0.333	390.372	7.192	1.607
5	0.417	487.965	4.075	0.911
6	0.500	585.559	2.644	0.591
7	0.583	683.152	1.677	0.375
8	0.667	780.745	1.065	0.238
9	0.750	878.338	0.681	0.152
		Sum = 100.000	Sum=	22.343

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.084	(0.550)	0.076	0.008
2	0.17	0.60	0.101	(0.550)	0.091	0.010
3	0.25	0.60	0.101	(0.550)	0.091	0.010
4	0.33	0.60	0.101	(0.550)	0.091	0.010
5	0.42	0.60	0.101	(0.550)	0.091	0.010
6	0.50	0.70	0.118	(0.550)	0.106	0.012
7	0.58	0.70	0.118	(0.550)	0.106	0.012
8	0.67	0.70	0.118	(0.550)	0.106	0.012
9	0.75	0.70	0.118	(0.550)	0.106	0.012
10	0.83	0.70	0.118	(0.550)	0.106	0.012
11	0.92	0.70	0.118	(0.550)	0.106	0.012
12	1.00	0.80	0.134	(0.550)	0.121	0.013
13	1.08	0.80	0.134	(0.550)	0.121	0.013
14	1.17	0.80	0.134	(0.550)	0.121	0.013
15	1.25	0.80	0.134	(0.550)	0.121	0.013
16	1.33	0.80	0.134	(0.550)	0.121	0.013

17	1.42	0.80	0.134	(	0.550)	0.121	0.013
18	1.50	0.80	0.134	(	0.550)	0.121	0.013
19	1.58	0.80	0.134	(	0.550)	0.121	0.013
20	1.67	0.80	0.134	(	0.550)	0.121	0.013
21	1.75	0.80	0.134	(	0.550)	0.121	0.013
22	1.83	0.80	0.134	(	0.550)	0.121	0.013
23	1.92	0.80	0.134	(	0.550)	0.121	0.013
24	2.00	0.90	0.151	(	0.550)	0.136	0.015
25	2.08	0.80	0.134	(	0.550)	0.121	0.013
26	2.17	0.90	0.151	(	0.550)	0.136	0.015
27	2.25	0.90	0.151	(	0.550)	0.136	0.015
28	2.33	0.90	0.151	(	0.550)	0.136	0.015
29	2.42	0.90	0.151	(	0.550)	0.136	0.015
30	2.50	0.90	0.151	(	0.550)	0.136	0.015
31	2.58	0.90	0.151	(	0.550)	0.136	0.015
32	2.67	0.90	0.151	(	0.550)	0.136	0.015
33	2.75	1.00	0.168	(	0.550)	0.151	0.017
34	2.83	1.00	0.168	(	0.550)	0.151	0.017
35	2.92	1.00	0.168	(	0.550)	0.151	0.017
36	3.00	1.00	0.168	(	0.550)	0.151	0.017
37	3.08	1.00	0.168	(	0.550)	0.151	0.017
38	3.17	1.10	0.185	(	0.550)	0.166	0.018
39	3.25	1.10	0.185	(	0.550)	0.166	0.018
40	3.33	1.10	0.185	(	0.550)	0.166	0.018
41	3.42	1.20	0.202	(	0.550)	0.181	0.020
42	3.50	1.30	0.218	(	0.550)	0.197	0.022
43	3.58	1.40	0.235	(	0.550)	0.212	0.024
44	3.67	1.40	0.235	(	0.550)	0.212	0.024
45	3.75	1.50	0.252	(	0.550)	0.227	0.025
46	3.83	1.50	0.252	(	0.550)	0.227	0.025
47	3.92	1.60	0.269	(	0.550)	0.242	0.027
48	4.00	1.60	0.269	(	0.550)	0.242	0.027
49	4.08	1.70	0.286	(	0.550)	0.257	0.029
50	4.17	1.80	0.302	(	0.550)	0.272	0.030
51	4.25	1.90	0.319	(	0.550)	0.287	0.032
52	4.33	2.00	0.336	(	0.550)	0.302	0.034
53	4.42	2.10	0.353	(	0.550)	0.317	0.035
54	4.50	2.10	0.353	(	0.550)	0.317	0.035
55	4.58	2.20	0.370	(	0.550)	0.333	0.037
56	4.67	2.30	0.386	(	0.550)	0.348	0.039
57	4.75	2.40	0.403	(	0.550)	0.363	0.040
58	4.83	2.40	0.403	(	0.550)	0.363	0.040
59	4.92	2.50	0.420	(	0.550)	0.378	0.042
60	5.00	2.60	0.437	(	0.550)	0.393	0.044
61	5.08	3.10	0.521	(	0.550)	0.469	0.052
62	5.17	3.60	0.605	(	0.550)	0.544	0.060
63	5.25	3.90	0.655		0.550	(0.590)	0.106
64	5.33	4.20	0.706		0.550	(0.635)	0.156
65	5.42	4.70	0.790		0.550	(0.711)	0.240
66	5.50	5.60	0.941		0.550	(0.847)	0.391
67	5.58	1.90	0.319	(	0.550)	0.287	0.032
68	5.67	0.90	0.151	(	0.550)	0.136	0.015
69	5.75	0.60	0.101	(	0.550)	0.091	0.010
70	5.83	0.50	0.084	(	0.550)	0.076	0.008
71	5.92	0.30	0.050	(	0.550)	0.045	0.005
72	6.00	0.20	0.034	(	0.550)	0.030	0.003

(Loss Rate Not Used)

Sum = 100.0 Sum = 2.3

Flood volume = Effective rainfall 0.19(In)
times area 22.2(Ac.)/[(In)/(Ft.)] = 0.3(Ac.Ft)
Total soil loss = 1.21(In)
Total soil loss = 2.238(Ac.Ft)
Total rainfall = 1.40(In)

Flood volume = 15180.0 Cubic Feet
Total soil loss = 97479.4 Cubic Feet

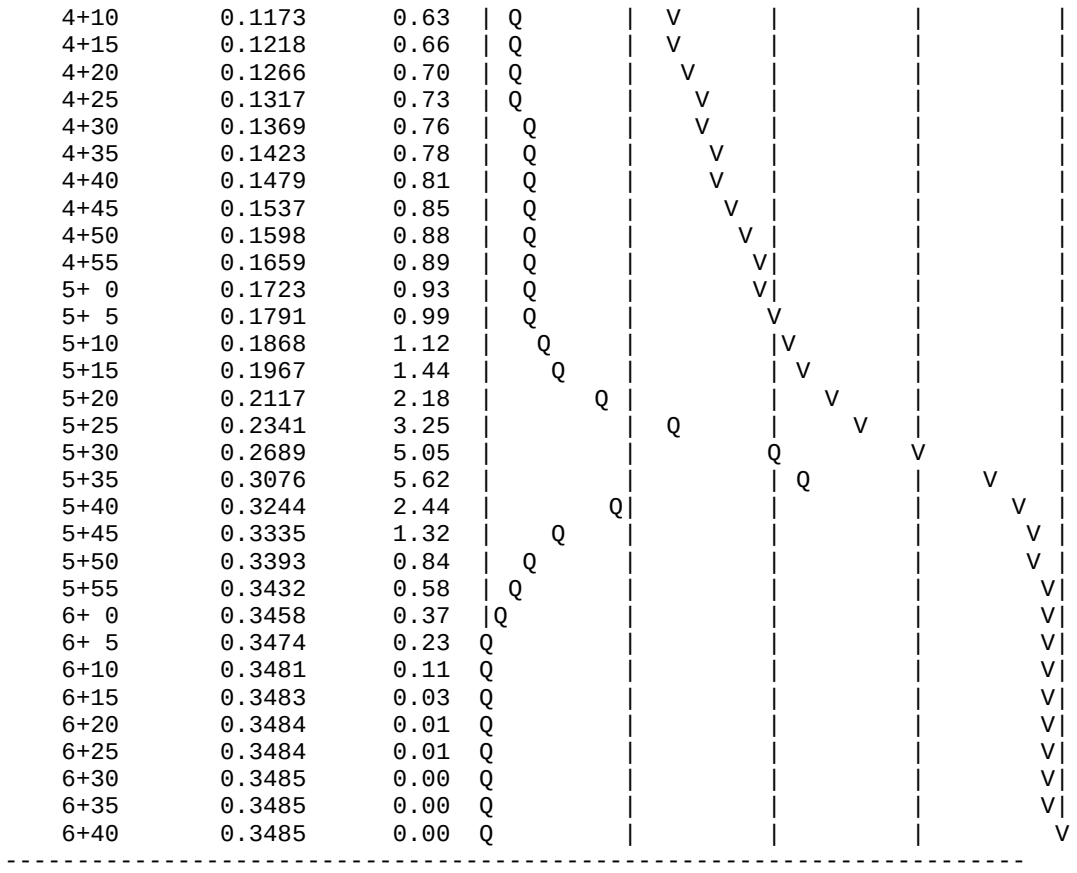
Peak flow rate of this hydrograph = 5.624(CFS)

++

6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0002	0.03	Q				
0+10	0.0011	0.13	Q				
0+15	0.0024	0.18	Q				
0+20	0.0038	0.20	Q				
0+25	0.0052	0.21	Q				
0+30	0.0068	0.22	Q				
0+35	0.0084	0.25	Q				
0+40	0.0102	0.25	|Q				
0+45	0.0120	0.26	|Q				
0+50	0.0138	0.26	|Q				
0+55	0.0156	0.26	|Q				
1+ 0	0.0174	0.27	|QV				
1+ 5	0.0194	0.29	|QV				
1+10	0.0214	0.29	|QV				
1+15	0.0235	0.30	|QV				
1+20	0.0255	0.30	|QV				
1+25	0.0276	0.30	|Q V				
1+30	0.0297	0.30	|Q V				
1+35	0.0317	0.30	|Q V				
1+40	0.0338	0.30	|Q V				
1+45	0.0359	0.30	|Q V				
1+50	0.0379	0.30	|Q V				
1+55	0.0400	0.30	|Q V				
2+ 0	0.0421	0.31	|Q V				
2+ 5	0.0443	0.32	|Q V				
2+10	0.0465	0.31	|Q V				
2+15	0.0487	0.33	|Q V				
2+20	0.0510	0.33	|Q V				
2+25	0.0533	0.34	|Q V				
2+30	0.0556	0.34	|Q V				
2+35	0.0580	0.34	|Q V				
2+40	0.0603	0.34	|Q V				
2+45	0.0627	0.34	|Q V				
2+50	0.0652	0.36	|Q V				
2+55	0.0677	0.37	|Q V				
3+ 0	0.0703	0.37	|Q V				
3+ 5	0.0728	0.37	|Q V				
3+10	0.0755	0.38	|Q V				
3+15	0.0782	0.40	|Q V				
3+20	0.0810	0.41	|Q V				
3+25	0.0839	0.42	|Q V				
3+30	0.0869	0.44	|Q V				
3+35	0.0902	0.47	|Q V				
3+40	0.0937	0.50	| Q V				
3+45	0.0972	0.52	| Q |V				
3+50	0.1010	0.54	| Q |V				
3+55	0.1048	0.56	| Q | V				
4+ 0	0.1088	0.58	| Q | V				
4+ 5	0.1130	0.60	| Q | V				


4+10 0.1173 0.63
4+15 0.1218 0.66
4+20 0.1266 0.70
4+25 0.1317 0.73
4+30 0.1369 0.76
4+35 0.1423 0.78
4+40 0.1479 0.81
4+45 0.1537 0.85
4+50 0.1598 0.88
4+55 0.1659 0.89
5+ 0 0.1723 0.93
5+ 5 0.1791 0.99
5+10 0.1868 1.12
5+15 0.1967 1.44
5+20 0.2117 2.18
5+25 0.2341 3.25
5+30 0.2689 5.05
5+35 0.3076 5.62
5+40 0.3244 2.44
5+45 0.3335 1.32
5+50 0.3393 0.84
5+55 0.3432 0.58
6+ 0 0.3458 0.37
6+ 5 0.3474 0.23
6+10 0.3481 0.11
6+15 0.3483 0.03
6+20 0.3484 0.01
6+25 0.3484 0.01
6+30 0.3485 0.00
6+35 0.3485 0.00
6+40 0.3485 0.00

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: BUH23EXIST32.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "B"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
2 YEAR - 3 HOUR
FN: BUH23EXIST

Drainage Area = 22.17(Ac.) = 0.035 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 22.17(Ac.) = 0.035 Sq. Mi.
Length along longest watercourse = 1554.00(Ft.)
Length along longest watercourse measured to centroid = 665.00(Ft.)
Length along longest watercourse = 0.294 Mi.
Length along longest watercourse measured to centroid = 0.126 Mi.
Difference in elevation = 68.00(Ft.)
Slope along watercourse = 231.0425 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.085 Hr.
Lag time = 5.12 Min.
25% of lag time = 1.28 Min.
40% of lag time = 2.05 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	1.00	22.17

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	2.40	53.21

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.000(In)
Area Averaged 100-Year Rainfall = 2.400(In)

Point rain (area averaged) = 1.000(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.000(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.170	71.00	0.000

Total Area Entered = 22.17(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
71.0	52.2	0.550	0.000	0.550	1.000	0.550
					Sum (F) =	0.550

Area averaged mean soil loss (F) (In/Hr) = 0.550
Minimum soil loss rate ((In/Hr)) = 0.275
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

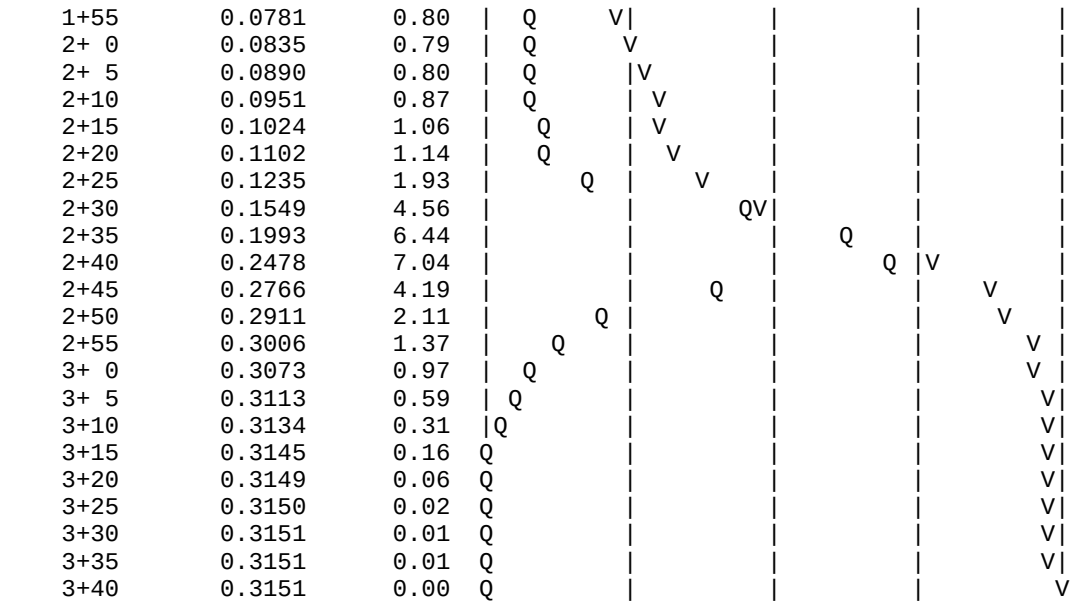
Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	97.593	18.462	4.125
2	0.167	195.186	48.190	10.767
3	0.250	292.779	16.014	3.578
4	0.333	390.372	7.192	1.607
5	0.417	487.965	4.075	0.911
6	0.500	585.559	2.644	0.591
7	0.583	683.152	1.677	0.375
8	0.667	780.745	1.065	0.238
9	0.750	878.338	0.681	0.152
		Sum = 100.000	Sum=	22.343

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.156	(0.550)	0.140	0.016
2	0.17	1.30	0.156	(0.550)	0.140	0.016
3	0.25	1.10	0.132	(0.550)	0.119	0.013
4	0.33	1.50	0.180	(0.550)	0.162	0.018
5	0.42	1.50	0.180	(0.550)	0.162	0.018
6	0.50	1.80	0.216	(0.550)	0.194	0.022
7	0.58	1.50	0.180	(0.550)	0.162	0.018
8	0.67	1.80	0.216	(0.550)	0.194	0.022
9	0.75	1.80	0.216	(0.550)	0.194	0.022
10	0.83	1.50	0.180	(0.550)	0.162	0.018
11	0.92	1.60	0.192	(0.550)	0.173	0.019
12	1.00	1.80	0.216	(0.550)	0.194	0.022
13	1.08	2.20	0.264	(0.550)	0.238	0.026
14	1.17	2.20	0.264	(0.550)	0.238	0.026
15	1.25	2.20	0.264	(0.550)	0.238	0.026
16	1.33	2.00	0.240	(0.550)	0.216	0.024

```
17   1.42     2.60      0.312       (  0.550)       0.281        0.031
18   1.50     2.70      0.324       (  0.550)       0.292        0.032
19   1.58     2.40      0.288       (  0.550)       0.259        0.029
20   1.67     2.70      0.324       (  0.550)       0.292        0.032
21   1.75     3.30      0.396       (  0.550)       0.356        0.040
22   1.83     3.10      0.372       (  0.550)       0.335        0.037
23   1.92     2.90      0.348       (  0.550)       0.313        0.035
24   2.00     3.00      0.360       (  0.550)       0.324        0.036
25   2.08     3.10      0.372       (  0.550)       0.335        0.037
26   2.17     4.20      0.504       (  0.550)       0.454        0.050
27   2.25     5.00      0.600       (  0.550)       0.540        0.060
28   2.33     3.50      0.420       (  0.550)       0.378        0.042
29   2.42     6.80      0.816          0.550    (  0.734)        0.266
30   2.50     7.30      0.876          0.550    (  0.788)        0.326
31   2.58     8.20      0.984          0.550    (  0.886)        0.434
32   2.67     5.90      0.708          0.550    (  0.637)        0.158
33   2.75     2.00      0.240       (  0.550)       0.216        0.024
34   2.83     1.80      0.216       (  0.550)       0.194        0.022
35   2.92     1.80      0.216       (  0.550)       0.194        0.022
36   3.00     0.60      0.072       (  0.550)       0.065        0.007
          (Loss Rate Not Used)
   Sum =     100.0                                    Sum =     2.0
    Flood volume = Effective rainfall      0.17(In)
     times area      22.2(Ac.)/[(In)/(Ft.)] =       0.3(Ac.Ft)
    Total soil loss =      0.83(In)
    Total soil loss =     1.532(Ac.Ft)
    Total rainfall =      1.00(In)
    Flood volume =       13727.7 Cubic Feet
    Total soil loss =       66741.6 Cubic Feet
    ---------------------------------------------------------------------
     Peak flow rate of this hydrograph =      7.036(CFS)
    ---------------------------------------------------------------------
    +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                      3 - H O U R    S T O R M
                  R u n o f f      H y d r o g r a p h
    ---------------------------------------------------------------------
               Hydrograph in   5   Minute intervals ((CFS))

    ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
-------------------------------------------------------------------------
  0+ 5       0.0004      0.06  Q         |         |         |         |
  0+10       0.0020      0.23  Q         |         |         |         |
  0+15       0.0040      0.28  VQ        |         |         |         |
  0+20       0.0060      0.30  VQ        |         |         |         |
  0+25       0.0085      0.35  |Q        |         |         |         |
  0+30       0.0112      0.39  |Q        |         |         |         |
  0+35       0.0141      0.43  |Q        |         |         |         |
  0+40       0.0170      0.42  |QV       |         |         |         |
  0+45       0.0202      0.46  |QV       |         |         |         |
  0+50       0.0233      0.46  |QV       |         |         |         |
  0+55       0.0263      0.43  |Q V      |         |         |         |
  1+ 0       0.0293      0.44  |Q V      |         |         |         |
  1+ 5       0.0326      0.49  |Q  V     |         |         |         |
  1+10       0.0364      0.55  | Q V     |         |         |         |
  1+15       0.0403      0.57  | Q  V    |         |         |         |
  1+20       0.0442      0.57  | Q  V    |         |         |         |
  1+25       0.0482      0.58  | Q   V   |         |         |         |
  1+30       0.0527      0.65  | Q   V   |         |         |         |
  1+35       0.0573      0.68  | Q    V  |         |         |         |
  1+40       0.0619      0.67  | Q    V  |         |         |         |
  1+45       0.0669      0.73  | Q     V |         |         |         |
  1+50       0.0725      0.81  |  Q     V|         |         |         |
```


1+55 0.0781 0.80
2+ 0 0.0835 0.79
2+ 5 0.0890 0.80
2+10 0.0951 0.87
2+15 0.1024 1.06
2+20 0.1102 1.14
2+25 0.1235 1.93
2+30 0.1549 4.56
2+35 0.1993 6.44
2+40 0.2478 7.04
2+45 0.2766 4.19
2+50 0.2911 2.11
2+55 0.3006 1.37
3+ 0 0.3073 0.97
3+ 5 0.3113 0.59
3+10 0.3134 0.31
3+15 0.3145 0.16
3+20 0.3149 0.06
3+25 0.3150 0.02
3+30 0.3151 0.01
3+35 0.3151 0.01
3+40 0.3151 0.00

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 06/02/15 File: BUH21EXIST12.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6268

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

AREA "B"
TENTATIVE TRACT MAP 36294 - EXISTING CONDITION
2 YEAR - 1 HOUR
FN: BUH21EXIST

Drainage Area = 22.17(Ac.) = 0.035 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 22.17(Ac.) = 0.035 Sq. Mi.
Length along longest watercourse = 1554.00(Ft.)
Length along longest watercourse measured to centroid = 665.00(Ft.)
Length along longest watercourse = 0.294 Mi.
Length along longest watercourse measured to centroid = 0.126 Mi.
Difference in elevation = 68.00(Ft.)
Slope along watercourse = 231.0425 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.085 Hr.
Lag time = 5.12 Min.
25% of lag time = 1.28 Min.
40% of lag time = 2.05 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	0.55	12.19

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
22.17	1.36	30.15

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 0.550(In)
Area Averaged 100-Year Rainfall = 1.360(In)

Point rain (area averaged) = 0.550(In)
Areal adjustment factor = 99.98 %
Adjusted average point rain = 0.550(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.170	71.00	0.000

Total Area Entered = 22.17(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
71.0	52.2	0.550	0.000	0.550	1.000	0.550
					Sum (F) =	0.550

Area averaged mean soil loss (F) (In/Hr) = 0.550
Minimum soil loss rate ((In/Hr)) = 0.275
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.4800

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	97.593	18.462	4.125
2	0.167	195.186	48.190	10.767
3	0.250	292.779	16.014	3.578
4	0.333	390.372	7.192	1.607
5	0.417	487.965	4.075	0.911
6	0.500	585.559	2.644	0.591
7	0.583	683.152	1.677	0.375
8	0.667	780.745	1.065	0.238
9	0.750	878.338	0.681	0.152
		Sum = 100.000	Sum=	22.343

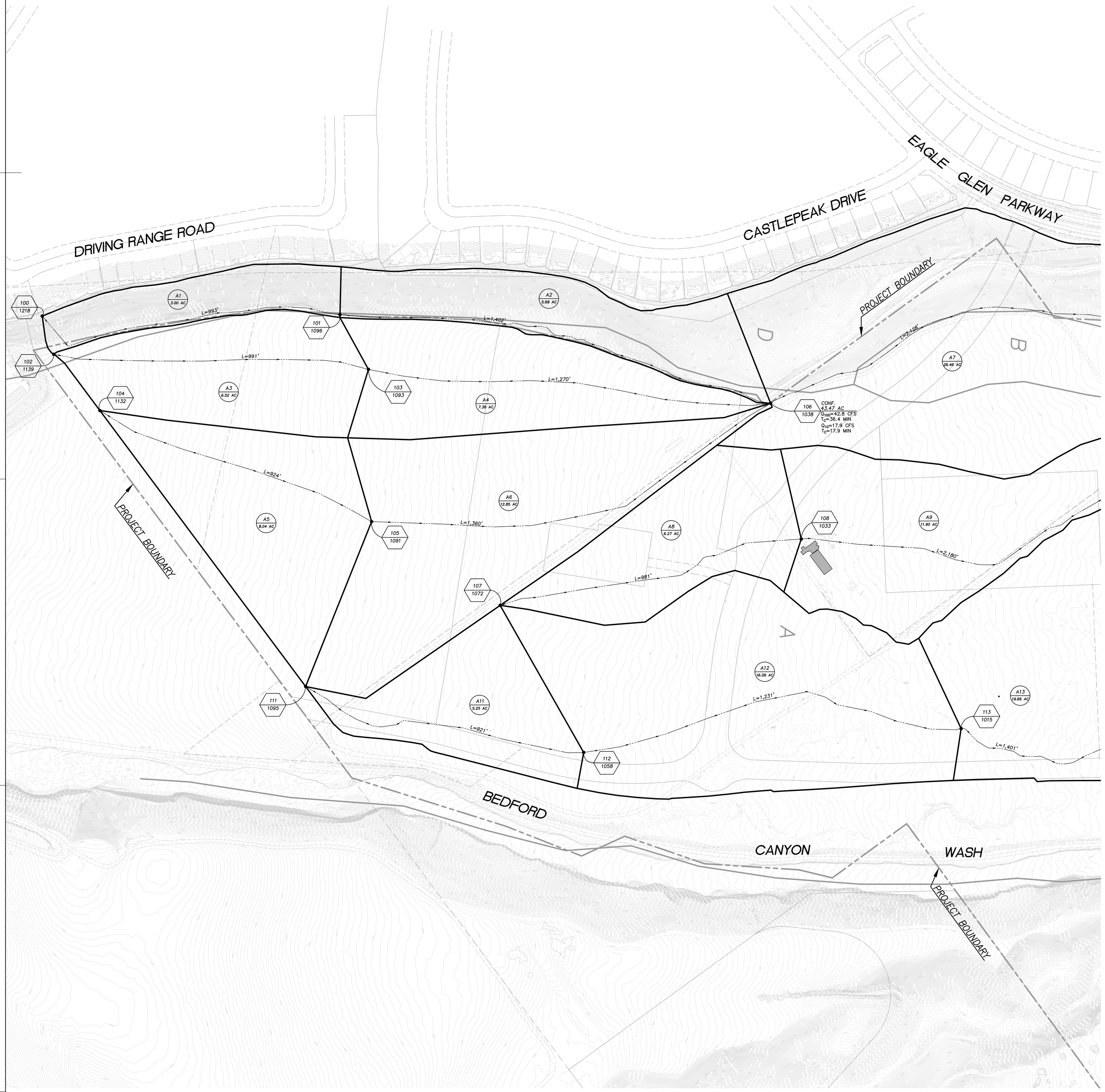
The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	4.40	0.290	(0.550)	0.261	0.029
2	0.17	4.50	0.297	(0.550)	0.267	0.030
3	0.25	5.40	0.356	(0.550)	0.321	0.036
4	0.33	5.40	0.356	(0.550)	0.321	0.036
5	0.42	5.70	0.376	(0.550)	0.339	0.038
6	0.50	6.40	0.422	(0.550)	0.380	0.042
7	0.58	7.90	0.521	(0.550)	0.469	0.052
8	0.67	9.10	0.600	(0.550)	0.540	0.060
9	0.75	12.80	0.845	0.550	(0.760)	0.295
10	0.83	25.60	1.689	0.550	(1.520)	1.140
11	0.92	7.90	0.521	(0.550)	0.469	0.052
12	1.00	4.90	0.323	(0.550)	0.291	0.032
	(Loss Rate Not Used)					
Sum =	100.0			Sum =	1.8	

```
      Flood volume = Effective rainfall      0.15(In)
       times area      22.2(Ac.)/[(In)/(Ft.)] =       0.3(Ac.Ft)
      Total soil loss =      0.40(In)
      Total soil loss =     0.732(Ac.Ft)
      Total rainfall =      0.55(In)
      Flood volume =       12348.2 Cubic Feet
      Total soil loss =       31905.3 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =     13.746(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                           1 - H O U R    S T O R M
                      R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
   ---------------------------------------------------------------------
     0+ 5       0.0008      0.12  Q         |          |          |          |
     0+10       0.0038      0.44  Q         |          |          |          |
     0+15       0.0078      0.57  |Q        |          |          |          |
     0+20       0.0125      0.68  |Q        |          |          |          |
     0+25       0.0176      0.74  |QV       |          |          |          |
     0+30       0.0231      0.81  |Q V      |          |          |          |
     0+35       0.0295      0.92  |Q  V     |          |          |          |
     0+40       0.0370      1.09  | Q  V    |          |          |          |
     0+45       0.0522      2.20  |   Q  V  |          |          |          |
     0+50       0.1091      8.27  |         |    VQ    |          |          |
     0+55       0.2038     13.75  |         |          |      QV  |          |
     1+ 0       0.2407      5.37  |         Q          |          |  V       |
     1+ 5       0.2594      2.71  |    Q    |          |          |     V    |
     1+10       0.2694      1.45  | Q       |          |          |       V  |
     1+15       0.2756      0.91  |Q        |          |          |       V  |
     1+20       0.2795      0.57  |Q        |          |          |        V |
     1+25       0.2820      0.35  Q         |          |          |        V |
     1+30       0.2833      0.20  Q         |          |          |        V |
     1+35       0.2834      0.02  Q         |          |          |        V |
     1+40       0.2835      0.00  Q         |          |          |        V |
  ---------------------------------------------------------------------
```

EXHIBIT “A”: HYDROLOGY MAP BASED ON EXISTING CONDITION
RATIONAL TABLING METHOD (SCALE: 1" = 100')



LEGEND:

- 112 / 1058 — NODE/CONCENTRATION POINT / FLOWLINE ELEVATION
- A3 / 3.11 AC — SUB AREA / ACRES
- L=807' — FLOW DISTANCE
- FLOW PATH/DIRECTION
- WATERSHED SUB-AREA BOUNDARY
- IMPERVIOUS AREA
- A / D — HYDROLOGIC SOIL GROUP BOUNDARY

GRAPHIC SCALE
100 0 50 100 200
1" = 100'
CONTOUR INTERVAL=1'

CASC Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.oei-casc.com

Drawing Name: Q:\1346-0001-TNHC\Study_Drainage\Hydrology Maps\EXHIBIT_A-RAT-EX_1.dwg
Last Opened: Jun 05, 2015 - 3:04pm by jruiz

EXHIBIT "A" SHEET 1 OF 2
HYDROLOGY MAP-RATIONAL METHOD
TTM NO. 36294-EXISTING CONDITION

EAGLE GLEN PARKWAY

BEDFORD CANYON ROAD

CAJALCO ROAD

PROJECT BOUNDARY

A7 26.46 AC

L=2,128'

L=2,180'

109 958 — CONF. 88.10 AC, Q_{100}=86.8 CFS, T_C=41.0 MIN, Q_{10}=45.0 CFS, T_C=23.7 MIN

A10 17.40 AC

L=1,377'

110 920 — 105.50 AC, Q_{100}=102.5 CFS, T_C=44.0 MIN, Q_{10}=56.5 CFS, T_C=27.3 MIN

A9 11.90 AC

115 992

A15 7.00 AC

116 959

A16 41.57 AC

L=947'

L=2,444'

A13 19.66 AC

B

L=1,401'

114 967

A14 23.50 AC

L=2,203'

A

B

BEDFORD CANYON WASH

PROJECT BOUNDARY

117 897 — CONF. 113.07 AC, Q_{100}=101.7 CFS, T_C=46.4 MIN, Q_{10}=48.5 CFS, T_C=31.4 MIN

200 1005

B1 3.79 AC

L=805'

202 987

201 978

B2 9.23 AC

B3 3.49 AC

L=565'

L=749'

PROJECT BOUNDARY

INTERSTATE 15

205 1090

B5 6.02 AC

6.02 AC, Q_{100}=19.9 CFS, T_C=5.0 MIN, Q_{10}=12.4 CFS, T_C=5.0 MIN — 206 1000

L=820'

B6 2.00 AC

208 1018

L=516'

L=637'

B7 8.00 AC

203 958

B4 5.66 AC

209 951 — 10.00 AC, Q_{100}=30.5 CFS, T_C=6.1 MIN, Q_{10}=18.8 CFS, T_C=6.2 MIN

L=770'

204 937 — CONF. 22.17 AC, Q_{100}=34.3 CFS, T_C=22.0 MIN, Q_{10}=20.1 CFS, T_C=22.3 MIN

207 1093

PROJECT BOUNDARY

SEE SHEET NO. 1

LEGEND:

- 112 / 1058 — NODE/CONCENTRATION POINT / FLOWLINE ELEVATION
- A3 / 3.11 AC — SUB AREA / ACRES
- L=807' — FLOW DISTANCE
- FLOW PATH/DIRECTION
- WATERSHED SUB-AREA BOUNDARY
- IMPERVIOUS AREA
- A / D — HYDROLOGIC SOIL GROUP BOUNDARY

GRAPHIC SCALE
100 0 50 100 200
1" = 100'
CONTOUR INTERVAL=1'

CASC
Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cei-casc.com

Drawing Name: Q:\1346-0001-TNHC\Study_Drainage\Hydrology Maps\EXHIBIT_A-RAT-EX_2.dwg
Last Opened: Jun 03, 2015 2:59pm by Paul

EXHIBIT "A" SHEET 2 OF 2

HYDROLOGY MAP-RATIONAL METHOD

TTM NO. 36294-EXISTING CONDITION

EXHIBIT “B”: HYDROLOGY MAP BASED ON PROPOSED CONDITION
RATIONAL TABLING METHOD (SCALE: 1" = 100')

DRIVING RANGE ROAD

CASTLEPEAK DRIVE

EAGLE GLEN PARKWAY

PROJECT BOUNDARY

STREET "C"

STREET "B"

LINE "A"

LINE "A3-B"

LINE "A3-A"

LINE "A3"

LINE "B"

CHANNEL "A"

100 1218.00

101 1105.00

102 1074.00

103 1039.00 **1033.50

104 1116.00

105 1078.00

106 1042.00 **1035.98

107 **1030.10

108 **1026.85

109 993.34

110 1045.85

111 1037.15

112 999.00 **995.05

113 **992.98

116 1047.10

117 1015.00

122 998.20

129 1006.00

A1 9.89 AC

A2 15.63 AC

A3 26.06 AC

A4 8.50 AC

A5 9.66 AC

A6 4.11 AC

A7 2.01 AC

A8 3.77 AC

A9 8.01 AC

A10 0.43 AC

A12 7.95 AC

A13 10.16 AC

A19 6.72 AC

L=764'

L=757'

L=794'

L=789'

L=645'

L=803'

L=310'

L=1,060'

L=753'

L=1,009'

L=1,122'

L=497'

[L=84']

[L=80']

[L=687']

[L=208']

54" RCP

36" RCP

51.58 AC
Q_{100}=91.2 CFS
Q_{10}=53.1 CFS

18.16 AC
Q_{100}=34.4 CFS
Q_{10}=20.8 CFS

11.78 AC
Q_{100}=19.6 CFS
Q_{10}=11.2 CFS

CONF.
69.74 AC
Q_{100}=123.7 CFS
Q_{10}=72.5 CFS

B=4'; D=3'
$Z_L=Z_R$=1.5
Q_{100}=130.3 CFS
Q_{10}=76.3 CFS

TEMPORARY DESILTING BASIN #1

TEMPORARY DESILTING BASIN #2

TEMPORARY DESILTING BASIN #3

TEMPORARY DESILTING BASIN #4

BEDFORD CANYON WASH

PROJECT BOUNDARY

SEE SHEET NO. 2

LEGEND:

- 112 / 1058.00 — NODE/CONCENTRATION POINT / FLOWLINE ELEVATION
- **1055.25 — PIPEFLOW ELEVATION
- A3 / 3.11 AC — SUB AREA / ACRES
- L=807' — FLOW DISTANCE
- [L=807'] — STORM DRAIN LINE DISTANCE
- FLOW PATH/DIRECTION
- WATERSHED SUB-AREA BOUNDARY
- IMPERVIOUS AREA
- A / D — HYDROLOGIC SOIL GROUP BOUNDARY

N

GRAPHIC SCALE
100 0 50 100 200
1" = 100'
CONTOUR INTERVAL=1'

EXHIBIT "B" SHEET 1 OF 2

HYDROLOGY MAP-RATIONAL METHOD

TTM NO. 36294-PROPOSED CONDITION

CASC Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cei-casc.com

Drawing Name: Q:\1346-0001-TNHC\Study_Drainage\Hydrology Maps\EXHIBIT_B-RAT-PROP_1.dwg
Last Opened: Jun 09, 2015 - 11:09am by jwiz

EAGLE GLEN PARKWAY

BEDFORD CANYON ROAD

CAJALCO ROAD

PROJECT BOUNDARY

LINE "A2"

LINE "A"

LINE "A1"

LINE "B"

LINE "B1"

LINE "C"

LINE "C4"

LINE "F"

LINE "G"

LINE "G2"

LINE "G3"

CHANNEL "A"

CHANNEL "B"

CHANNEL "C"

CHANNEL "C5"

STREET "A"

STREET "B"

STREET "E"

BEDFORD CANYON WASH

INTERSTATE 15

A6 4.11 AC

A7 2.01 AC

A10 0.43 AC

A11 0.16 AC

A13 10.16 AC

A14 10.98 AC

A15 9.94 AC

A16 15.59 AC

A17 29.95 AC

A18 12.36 AC

A19 6.72 AC

A20 6.75 AC

A22 7.59 AC

DETENTION/WATER QUALITY BASIN

B1 4.16 AC

B2 11.55 AC

B3 2.00 AC

B4 1.69 AC

B5 2.77 AC

C1 6.02 AC

C2 2.00 AC

C3 8.00 AC

109 993.34

112 1058.00 **1055.25

113 **992.98

115 **986.91

118 987.00 **984.82

119 **984.53

120 983.58

122 998.20

123 975.50

124 957.10

125 923.00 **918.53

126 **914.24

127 **916.46 **915.25

128 893.50

130 975.85

131 941.00 **935.89

132 **934.51

133 913.05

134 893.40 **893.40

135 **892.90

200 1005.00

201 981.15

202 937.50 **922.91

203 **922.00

204 1016.00

205 956.00

206 929.25 **922.59

207 **922.00

208 922.00 **919.63

209 **917.72

313 1090.00

314 1000.96

315 1086.00

316 1018.00

317 951.40

318 943.50

L=1,009'

L=259'

L=44'

L=51'

L=282'

L=96'

L=1,122'

L=497'

L=208'

L=699'

L=546'

L=753'

L=902'

L=2,077'

L=1,439'

L=1,252'

L=804'

L=516'

L=622'

L=773'

L=652'

L=1,185'

L=753'

L=564'

L=437'

L=518'

L=860'

L=65'

L=86'

L=110'

L=527'

[L=259']

[L=116']

[L=205']

[L=35']

[L=208']

[L=177']

[L=222']

24" RCP

36" RCP

42" RCP

48" RCP

72" RCP

18" RCP

30" RCP

(2) 36" RCP

117.32 AC
Q_{100}=199.5 CFS
Q_{10}=116.6 CFS

55.48 AC
Q_{100}=99.8 CFS
Q_{10}=60.6 CFS

18.11 AC
Q_{100}=29.9 CFS
Q_{10}=17.8 CFS

CONF. 30.48 AC
Q_{100}=50.4 CFS
Q_{10}=28.9 CFS

CONF. 106.34 AC
Q_{100}=181.4 CFS
Q_{10}=106.1 CFS

B=4'; D=3'
Z_L=Z_R=1.5
Q_{100}=50.0 CFS
Q_{10}=28.7 CFS

B=4'; D=5'
Z_L=Z_R=1.5
Q_{100}=199.1 CFS
Q_{10}=116.3 CFS

B=4'; D=3'
Z_L=Z_R=1.5
Q_{100}=199.1 CFS
Q_{10}=116.3 CFS

B=6'; D=3'
Z_L=Z_R=1.5
Q_{100}=199.1 CFS
Q_{10}=116.3 CFS

CONF. 172.80 AC
Q_{100}=288.9 CFS
Q_{10}=171.6 CFS

B=6'; D=4'
Z_L=Z_R=1.5
Q_{100}=310.8 CFS
Q_{10}=185.1 CFS

B=6'; D=5.5'
Z_L=Z_R=1.5
Q_{100}=310.8 CFS
Q_{10}=185.1 CFS

12.21 AC
Q_{100}=20.2 CFS
Q_{10}=11.5 CFS

B=8'; D=VARIES
Z_L=Z_R=2
Q_{100}=20.2 CFS
Q_{10}=11.5 CFS

13.47 AC
Q_{100}=33.4 CFS
Q_{10}=21.2 CFS

185.16 AC
Q_{100}=311.2 CFS
Q_{10}=185.3 CFS

25.82 AC
Q_{100}=56.5 CFS
Q_{10}=35.6 CFS

CONF. 218.57 AC
Q_{100}=134.5 CFS
Q_{10}=41.7 CFS

218.57 AC
Q_{100}=134.5 CFS
T_C=33.8 MIN
Q_{10}=41.7 CFS
T_C=37.5 MIN

6.02 AC
Q_{100}=19.9 CFS
Q_{10}=12.4 CFS

CONF. 16.02 AC
Q_{100}=45.6 CFS
Q_{10}=28.0 CFS

3.69 AC
Q_{100}=10.0 CFS
Q_{10}=6.4 CFS

B=4'; D=4'
Z_L=Z_R=1.5
Q_{100}=45.6 CFS
Q_{10}=28.0 CFS

15.71 AC
Q_{100}=37.3 CFS
Q_{10}=23.5 CFS

CONF. 22.17 AC
Q_{100}=17.5 CFS
Q_{10}=6.5 CFS

22.17 AC
Q_{100}=17.5 CFS
T_C=17.6 MIN
Q_{10}=6.5 CFS
T_C=18.9 MIN

16.02 AC
Q_{100}=45.6 CFS
T_C=8.9 MIN
Q_{10}=28.0 CFS
T_C=9.4 MIN

TEMPORARY DESILTING BASIN #3

TEMPORARY DESILTING BASIN #5

TEMPORARY DESILTING BASIN #6

BASIN "A"
BASIN SPILLWAY ELEV.=902.50'
BASIN BOTTOM ELEV.=893.50'
100-YR VOLUME=88.1 AC-FT
WSE=902.25'
OUTFLOW=134.5 CFS
INFLOW=176.2 CFS
SPILLWAY LENGTH=162'

BASIN "B"
BASIN SPILLWAY ELEV.=927.50'
BASIN BOTTOM ELEV.=922.00'
100-YR VOLUME=11.8 AC-FT
WSE=927.33'
OUTFLOW=17.5 CFS
INFLOW=21.7 CFS
SPILLWAY LENGTH=26'

L=3310' DETENTION/WATER QUALITY BASIN

SEE SHEET NO. 1

LEGEND:

- 112 / 1058.00 — NODE/CONCENTRATION POINT / FLOWLINE ELEVATION
- **1055.25 — PIPEFLOW ELEVATION
- A3 / 3.11 AC — SUB AREA / ACRES
- L=807' — FLOW DISTANCE
- [L=807'] — STORM DRAIN LINE DISTANCE
- FLOW PATH/DIRECTION
- WATERSHED SUB-AREA BOUNDARY
- IMPERVIOUS AREA
- A / D — HYDROLOGIC SOIL GROUP BOUNDARY

GRAPHIC SCALE
100 0 50 100 200
1" = 100'
CONTOUR INTERVAL=1'

EXHIBIT "B" SHEET 2 OF 2

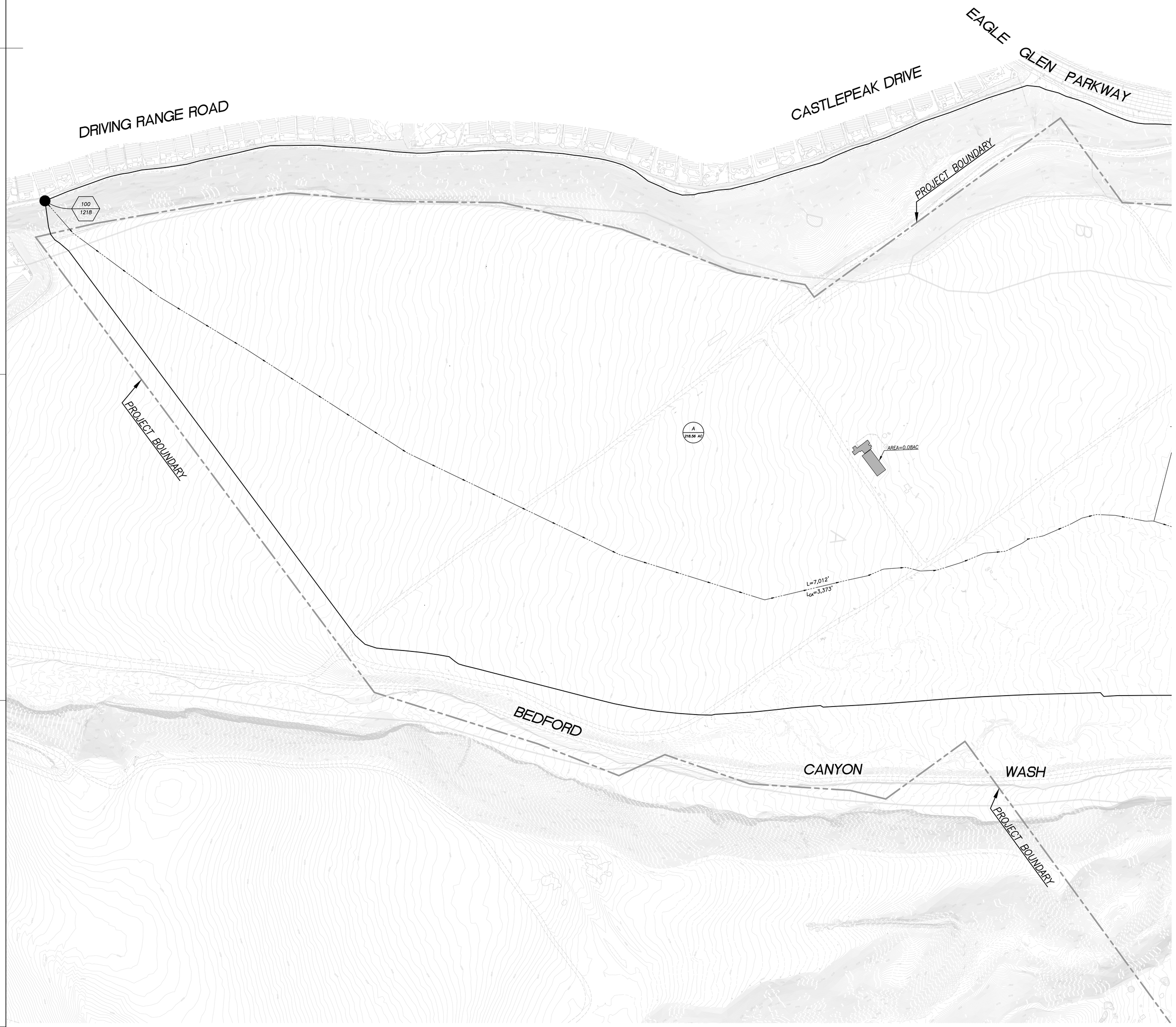
HYDROLOGY MAP-RATIONAL METHOD

TTM NO. 36294-PROPOSED CONDITION

CASC Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cei-casc.com

Drawing Name: \\vbr-nas1\cei\1346-001-TNHC\Study_Drainage\Hydrology Maps\EXHIBIT_B-RAT-PROP_2.dwg
Last Saved: Dec 02, 2015 - 4:48pm by Paz

EXHIBIT “C”: HYDROLOGY MAP BASED ON EXISTING CONDITION
HYDROGRAPH METHOD (SCALE: 1" = 100')



HYDROLOGY DATA

AREA DESIGNATION		A		B	
NODAL POINT		100-101		200-201	
AREA SIZE (AC)		218.56		22.17	
		FLOW (CFS)	VOLUME (AC-FT)	FLOW (CFS)	VOLUME (AC-FT)
2-YR	1-HR	55.6	2.4	13.7	0.3
	3-HR	30.9	2.4	7.0	0.3
	6-HR	22.9	2.9	5.6	0.3
	24-HR	**7.0**	**4.6**	**0.8**	**0.5**
5-YR	1-HR	94.7	4.0	21.9	0.5
	3-HR	70.6	4.6	13.1	0.6
	6-HR	49.5	4.5	9.7	0.6
	24-HR	**10.7**	**6.9**	**1.1**	**0.7**
10-YR	1-HR	164.3	7.6	32.9	1.0
	3-HR	137.0	8.8	22.2	1.2
	6-HR	104.2	8.5	17.4	1.2
	24-HR	**44.6**	**12.6**	**7.6**	**2.0**
100-YR	1-HR	302.8	16.2	54.8	1.9
	3-HR	259.2	19.8	37.9	2.5
	6-HR	196.4	18.1	28.9	2.3
	24-HR	**134.8**	**43.7**	**17.4**	**5.9**

LEGEND:

- 112 / 1058.00 — NODE/CONCENTRATION POINT / FLOWLINE ELEVATION
- A / 3.11 AC — SUB AREA / ACRES
- L=807' — FLOW DISTANCE
- L_{CA}=807' — FLOW DISTANCE MEASURED UPSTREAM TO POINT OF CENTROID
- FLOW PATH/DIRECTION
- WATERSHED SUB-AREA BOUNDARY
- IMPERVIOUS AREA
- C.G. — MAIN CENTROID
- A / D — HYDROLOGIC SOIL GROUP BOUNDARY

GRAPHIC SCALE
100 0 50 100 200
1" = 100'
CONTOUR INTERVAL=1'

CASC Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cei-casc.com

EXHIBIT "C" SHEET 1 OF 2
HYDROLOGY MAP-HYDROGRAPH METHOD
TTM NO. 36294-EXISTING CONDITION

S:\1346-0001-TTM#1\Study_Drainage\Hydrology Maps\ EXHIBIT_C-Ex-EX_1.dwg 06/02/15 07:39

EAGLE GLEN PARKWAY

BEDFORD CANYON ROAD

CAJALCO ROAD

PROJECT BOUNDARY

C.G.

A
218.56 AC

L=7,012'
L_{CA}=3,373'

B
22.17 AC

L=1,554'
L_{CA}=885'

BEDFORD CANYON WASH

PROJECT BOUNDARY

PROJECT BOUNDARY

PROJECT BOUNDARY

INTERSTATE 15

101
897

200
1005

201
937

SEE SHEET NO. 1

16.02 AC. EXCLUDED FROM UNIT HYDROGRAPH ANALYSIS. RUNOFF FLOWS BYPASS DEVELOPMENT UNDER PROPOSED CONDITION. AREA ANALYZED UNDER RATIONAL STUDY FOR INFRASTRUCTURE DESIGN PURPOSES.

LEGEND:

112 / 1058.00	NODE/CONCENTRATION POINT / FLOWLINE ELEVATION
A3 / 3.11 AC	SUB AREA / ACRES
L=807'	FLOW DISTANCE
L_{CA}=807'	FLOW DISTANCE MEASURED UPSTREAM TO POINT OF CENTROID
	FLOW PATH/DIRECTION
	WATERSHED SUB-AREA BOUNDARY
	IMPERVIOUS AREA
C.G.	MAIN CENTROID
A / D	HYDROLOGIC SOIL GROUP BOUNDARY

N

GRAPHIC SCALE
100 0 50 100 200
1" = 100'

CONTOUR INTERVAL=1'

HYDROLOGY DATA

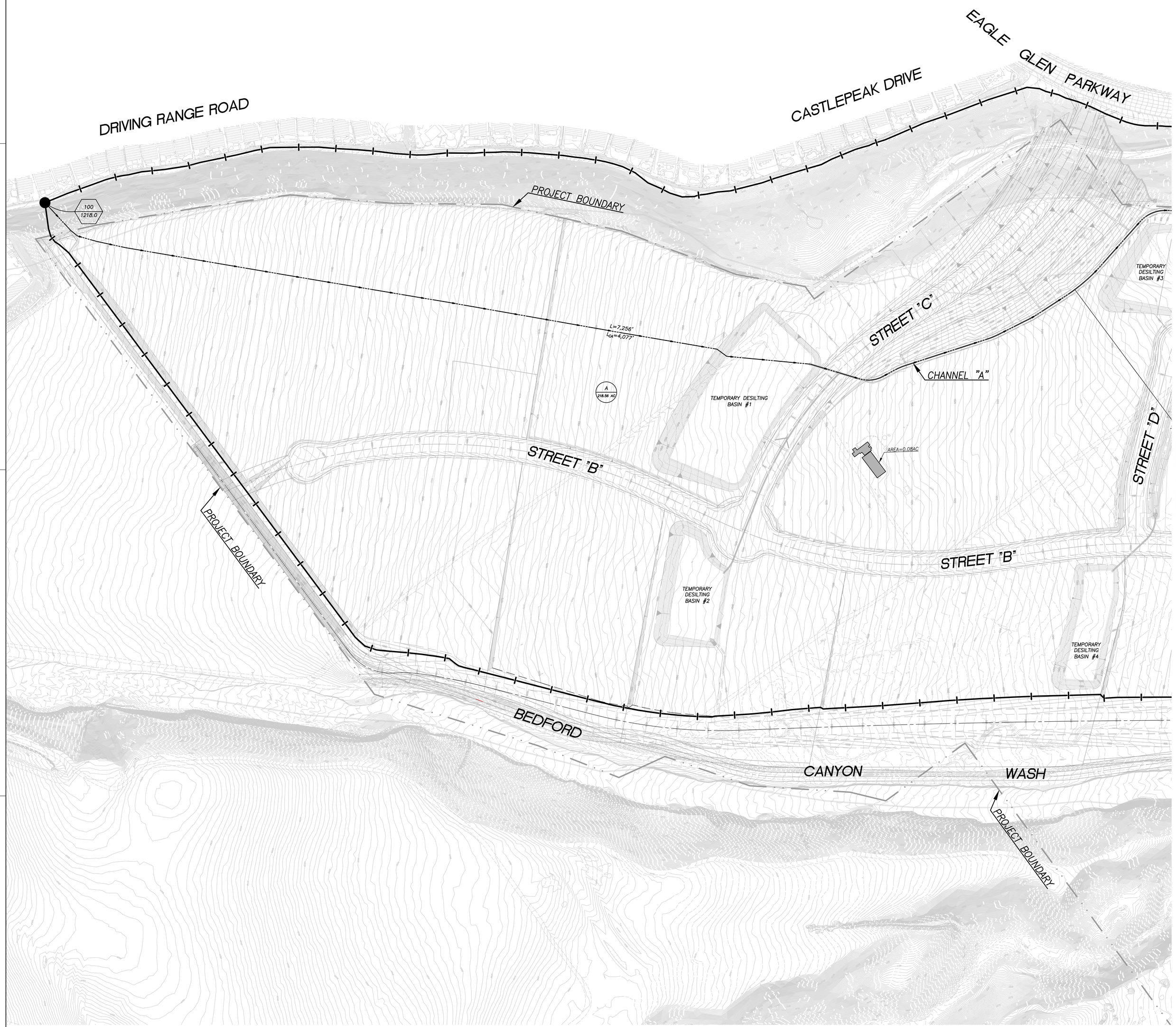
AREA DESIGNATION		A		B	
NODAL POINT		100-101		200-201	
AREA SIZE (AC)		218.56		22.17	
		FLOW (CFS)	VOLUME (AC-FT)	FLOW (CFS)	VOLUME (AC-FT)
2-YR	1-HR	55.6	2.4	13.7	0.3
	3-HR	30.9	2.4	7.0	0.3
	6-HR	22.9	2.9	5.6	0.3
	24-HR	**7.0**	**4.6**	**0.8**	**0.5**
5-YR	1-HR	94.7	4.0	21.9	0.5
	3-HR	70.6	4.6	13.1	0.6
	6-HR	49.5	4.5	9.7	0.6
	24-HR	**10.7**	**6.9**	**1.1**	**0.7**
10-YR	1-HR	164.3	7.6	32.9	1.0
	3-HR	137.0	8.8	22.2	1.2
	6-HR	104.2	8.5	17.4	1.2
	24-HR	**44.6**	**12.6**	**7.6**	**2.0**
100-YR	1-HR	302.8	16.2	54.8	1.9
	3-HR	259.2	19.8	37.9	2.5
	6-HR	196.4	18.1	28.9	2.3
	24-HR	**134.8**	**43.7**	**17.4**	**5.9**

CASC
Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cei-cosc.com

EXHIBIT "C" SHEET 2 OF 2
HYDROLOGY MAP-HYDROGRAPH METHOD
TTM NO. 36294-EXISTING CONDITION

G:\CASC-0001-TM\CS\Study_Drainage\Hydrology Maps_Exhibit_C-Ltr-EX_2.dwg 06/02/25 07:57

EXHIBIT “D”: HYDROLOGY MAP BASED ON PROPOSED CONDITION
HYDROGRAPH METHOD (SCALE: 1" = 100')



HYDROLOGY DATA

AREA DESIGNATION		A		B	
NODAL POINT		100-101		200-201	
AREA SIZE (AC)		218.56		22.17	
		FLOW (CFS)	VOLUME (AC-FT)	FLOW (CFS)	VOLUME (AC-FT)
2-YR	1-HR	151.8	6.0	20.9	0.8
	3-HR	102.0	10.1	15.6	1.4
	6-HR	92.5	14.1	14.3	1.9
	24-HR	**40.6**	**25.0**	**5.6**	**3.4**
5-YR	1-HR	221.6	8.5	29.3	1.1
	3-HR	155.5	14.0	22.1	1.9
	6-HR	128.9	18.1	19.2	2.5
	24-HR	**61.5**	**37.9**	**8.5**	**5.2**
10-YR	1-HR	291.1	11.0	37.0	1.4
	3-HR	213.7	17.7	28.2	2.3
	6-HR	175.1	22.0	24.2	3.0
	24-HR	**81.4**	**47.9**	**11.9**	**6.6**
100-YR	1-HR	483.1	19.0	58.7	2.3
	3-HR	360.0	29.5	44.5	3.7
	6-HR	283.0	34.1	36.7	4.5
	24-HR	**176.2**	**88.1**	**21.7**	**11.8**

LEGEND:

- 106 / 1040 — NODE/CONCENTRATION POINT / FLOWLINE ELEVATION
- A3 / 3.11 AC — SUB AREA / ACRES
- L=747' — FLOW DISTANCE
- L_{CA}=200' — FLOW DISTANCE MEASURED UPSTREAM TO POINT OF CENTROID
- FLOW PATH/DIRECTION
- WATERSHED SUB-AREA BOUNDARY
- IMPERVIOUS AREA
- C.G. — MAIN CENTROID
- A / D — HYDROLOGIC SOIL GROUP BOUNDARY

GRAPHIC SCALE
100 0 50 100 200
1" = 100'

CONTOUR INTERVAL=1'

CASC Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cesc-casc.com

Drawing Name: Q:\1346-0001 - TTM45\Study_Drainage\Hydrology Maps\EXHIBIT_D-UH-PROP_1.dwg
Last Opened: Jun 08, 2015 - 1:34pm by fjiz

EXHIBIT "D" SHEET 1 OF 2
HYDROLOGY MAP-HYDROGRAPH METHOD
TTM NO. 36294-PROPOSED CONDITION

EAGLE GLEN PARKWAY

BEDFORD CANYON ROAD

PROJECT BOUNDARY

L=7,256'
L_{CA}=4,077'

CHANNEL "A"

TEMPORARY DESILTING BASIN #3

CHANNEL "B"

TEMPORARY DESILTING BASIN #6

STREET "A"

CHANNEL "A"

CAJALCO ROAD

STREET "D"

C.G.

A
218.56 AC

101
893.5

PROJECT BOUNDARY

STREET "B"

TEMPORARY DESILTING BASIN #7

DETENTION/WATER QUALITY BASIN

BEDFORD CANYON

STREET "E"

WASH

200
1005.0

PROJECT BOUNDARY

A
218.56 AC

L=1,925'
L_{CA}=1,141'

PROJECT BOUNDARY

B
22.17 AC

C.G.

INTERSTATE 15

201
922.0

DETENTION/WATER QUALITY BASIN

16.02 AC. EXCLUDED FROM UNIT HYDROGRAPH ANALYSIS. RUNOFF FLOWS BYPASS DEVELOPMENT UNDER PROPOSED CONDITION. AREA ANALYZED UNDER RATIONAL STUDY FOR INFRASTRUCTURE DESIGN PURPOSES.

SEE SHEET NO. 1

LEGEND:

- 106 / 1040 — NODE/CONCENTRATION POINT / FLOWLINE ELEVATION
- A3 / 3.11 — SUB AREA / ACRES
- L=747' — FLOW DISTANCE
- L_{CA}=200' — FLOW DISTANCE MEASURED UPSTREAM TO POINT OF CENTROID
- FLOW PATH/DIRECTION
- WATERSHED SUB-AREA BOUNDARY
- IMPERVIOUS AREA
- C.G. — MAIN CENTROID
- A / D — HYDROLOGIC SOIL GROUP BOUNDARY

GRAPHIC SCALE
100 0 50 100 200
1" = 100'

CONTOUR INTERVAL=1'

HYDROLOGY DATA

AREA DESIGNATION		A		B	
NODAL POINT		100-101		200-201	
AREA SIZE (AC)		218.56		22.17	
		FLOW (CFS)	VOLUME (AC-FT)	FLOW (CFS)	VOLUME (AC-FT)
2-YR	1-HR	151.8	6.0	20.9	0.8
	3-HR	102.0	10.1	15.6	1.4
	6-HR	92.5	14.1	14.3	1.9
	24-HR	**40.6**	**25.0**	**5.6**	**3.4**
5-YR	1-HR	221.6	8.5	29.3	1.1
	3-HR	155.5	14.0	22.1	1.9
	6-HR	128.9	18.1	19.2	2.5
	24-HR	**61.5**	**37.9**	**8.5**	**5.2**
10-YR	1-HR	291.1	11.0	37.0	1.4
	3-HR	213.7	17.7	28.2	2.3
	6-HR	175.1	22.0	24.2	3.0
	24-HR	**81.4**	**47.9**	**11.9**	**6.6**
100-YR	1-HR	483.1	19.0	58.7	2.3
	3-HR	360.0	29.5	44.5	3.7
	6-HR	283.0	34.1	36.7	4.5
	24-HR	**176.2**	**88.1**	**21.7**	**11.8**

CASC Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cal-casc.com

Drawing Name: Q:\1346-0001- TMs\Study_Drainage\Hydrology Maps\EXHIBIT_D-UH-PROP_2.dwg
Last Opened: Jun 09, 2015 1:53pm by jtd

EXHIBIT "D" SHEET 2 OF 2
HYDROLOGY MAP-HYDROGRAPH METHOD
TTM NO. 36294-PROPOSED CONDITION

This Page Intentionally Left Blank

APPENDIX G-4:

PA 14 Hydrology and WQMP Certification

This Page Intentionally Left Blank

HUNSAKER
& ASSOCIATES
IRVINE, INC.
INLAND EMPIRE REGION

PLANNING
ENGINEERING
SURVEYING
GOVERNMENT RELATIONS

IRVINE
LOS ANGELES
PALM DESERT
RIVERSIDE
SAN DIEGO

October 4, 2019

City of Corona
Public Works Department
400 S. Vincentia Avenue
Corona, Ca. 92882

Attn: Mr. Tom Koper, PE

Mr. Koper,

This letter is to address the Hydrological and WQMP studies previously prepared for PA-14 (new home phasing 2B). Please be advised that by lowering the elevation of PA-14 by 13' to generate needed soils to raise the proposed commercial site, the change will not result in any diversion or alteration of drainage patterns. While lowering the elevation of PA-14 by 13 feet could create approximately 1 additional acre of developable area, the drainage areas and discharge points will be maintained as envisioned in New Home master plan of drainage and the drainage facilities as designed are sufficiently sized to accommodate the additional discharge from the 1 acre increase in developable area. Similarly, water quality goals can be achieved in the same way as proposed by the master WQMP plan for the Bedford community. No additional water quality facilities are envisioned at this time and the currently designed water quality facilities have sufficient capacity to treat the increase in developable area associated with lowering the elevation of PA-14.

FOUNDING PARTNERS:
RICHARD HUNSAKER
TOM R. McGANNON
JOHN A. MICHLER
DOUGLAS G. SNYDER

PRINCIPALS:
DAVID FRATTONE
FRED GRAYLEE
BRADLEY B. HAY
PAUL R. HUDDLESTON, JR
KAMAL H. KARAM
DOUGLAS L. STALEY
KRIS WEBER
JOSEPH E. WIGHTMAN

HUNSAKER & ASSOCIATES IRVINE, INC.

Paul R. Huddleston, Jr., PE, PLS
RCE 58020
Expires 6/30/20

2900 Adams Street
Suite A-15
Riverside, California
92504
(951) 352-7200 PH
(951) 352-8269 FX
www. hunsaker.com

This Page Intentionally Left Blank

APPENDIX H:

Noise Impact Analysis

This Page Intentionally Left Blank

Bedford Marketplace

NOISE IMPACT ANALYSIS

CITY OF CORONA

PREPARED BY:

Bill Lawson, PE, INCE
blawson@urbanxroads.com
(949) 336-5979

JANUARY 30, 2020

TABLE OF CONTENTS

TABLE OF CONTENTS III
APPENDICES IV
LIST OF EXHIBITS V
LIST OF TABLES V
LIST OF ABBREVIATED TERMS VI
EXECUTIVE SUMMARY 1

Off-Site Project Traffic Noise Analysis 1
Soil Import/Export Haul Truck Off-Site Traffic Noise Analysis 1
On-Site Traffic Noise Impacts 2
Project Operational Noise Analysis 3
Soil Import/Export Construction Noise Analysis 3
Project Site Construction Noise Analysis 4
Summary of CEQA Significance Findings 4

1 INTRODUCTION 7

1.1 Site Location 7
1.2 Bedford Marketplace Land use Description 7

2 FUNDAMENTALS 11

2.1 Range of Noise 11
2.2 Noise Descriptors 12
2.3 Sound Propagation 12
2.4 Noise Control 13
2.5 Noise Barrier Attenuation 14
2.6 Land Use Compatibility With Noise 14
2.7 Community Response to Noise 14
2.8 Vibration 15

3 REGULATORY SETTING 17

3.1 State of California Noise Requirements 17
3.2 State of California Green Building Standards Code 17
3.3 City of Corona General Plan Public Health and Safety Element 17
3.4 Operational Noise Standards 21
3.5 Construction Noise Standards 22
3.6 Construction Vibration Standards 23

4 SIGNIFICANCE CRITERIA 25

4.1 CEQA Guidelines Not Further Analyzed 25
4.2 Project Related Noise Level Increases 25
4.3 Significance Criteria Summary 26

5 EXISTING NOISE LEVEL MEASUREMENTS 29

5.1 Measurement Procedure and Criteria 29
5.2 Noise Measurement Locations 29
5.3 Noise Measurement Results 30

6 METHODS AND PROCEDURES 33

6.1 FHWA Traffic Noise Prediction Model 33

6.2 Off-Site Traffic Noise Prediction Model Inputs 33
6.3 On-Site Traffic Noise Prediction Model Inputs 37
6.4 Vibration Assessment 38
7 OFF-SITE TRAFFIC NOISE IMPACTS 39
7.1 Project Traffic Noise Contours 39
7.2 Existing Conditions Project Traffic Noise Level Contributions 46
7.3 Interim Year 2021 Project Traffic Noise Level Contributions 46
7.4 Horizon Year 2035 Project Traffic Noise Level Contributions 46
7.5 Soil Import/Export Haul Truck Off-Site Traffic Analysis 50
8 ON-SITE NOISE IMPACTS 53
8.1 Exterior Noise Analysis 53
8.2 Interior Noise Analysis 54
9 RECEIVER LOCATIONS 57
10 OPERATIONAL IMPACTS 61
10.1 Reference Noise Levels 61
10.2 Project Operational Noise Levels 65
10.3 Project Operational Noise Level Compliance 67
10.4 Project Operational Noise Level Contributions 68
11 CONSTRUCTION IMPACTS 71
11.1 Construction Noise Levels 71
11.2 Construction Reference Noise Levels 71
11.3 Soil Import/Export Construction Borrow Sites 73
11.4 Soil Import/Export Construction Noise Analysis 74
11.5 Soil Import/Export Noise Compliance 76
11.6 Construction Noise Analysis 79
11.7 Construction Noise Level Compliance 83
11.8 Construction Vibration Impacts 83
12 REFERENCES 85
13 CERTIFICATION 87

APPENDICES

APPENDIX 3.1: CITY OF CORONA MUNICIPAL CODE
APPENDIX 5.1: STUDY AREA PHOTOS
APPENDIX 5.2: NOISE LEVEL MEASUREMENT WORKSHEETS
APPENDIX 7.1: OFF-SITE TRAFFIC NOISE LEVEL CONTOURS
APPENDIX 7.2: OFF-SITE SOIL IMPORT/EXPORT HAUL TRUCK CONSTRUCTION ANALYSIS
APPENDIX 8.1: ON-SITE TRAFFIC NOISE ANALYSIS
APPENDIX 10.1: OPERATIONAL NOISE LEVEL CALCULATIONS

LIST OF EXHIBITS

EXHIBIT 1-A: LOCATION MAP 8
EXHIBIT 1-B: BEDFORD MARKETPLACE SITE PLAN 9
EXHIBIT 2-A: TYPICAL NOISE LEVELS 11
EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION 15
EXHIBIT 2-C: TYPICAL LEVELS OF GROUND-BORNE VIBRATION 16
EXHIBIT 3-A: LAND USE NOISE COMPATIBILITY MATRIX 20
EXHIBIT 3-B: INTERIOR AND EXTERIOR NOISE STANDARDS 21
EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS 32
EXHIBIT 7-A: SOIL IMPORT/EXPORT HAUL TRUCK ROUTE 51
EXHIBIT 9-A: SENSITIVE RECEIVER LOCATIONS 59
EXHIBIT 10-A: OPERATIONAL NOISE SOURCE LOCATIONS 62
EXHIBIT 11-A: CONSTRUCTION NOISE SOURCE LOCATIONS 72

LIST OF TABLES

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS 5
TABLE 3-1: OPERATIONAL NOISE STANDARDS 22
TABLE 3-2: CONSTRUCTION NOISE STANDARDS 23
TABLE 3-3: CONSTRUCTION VIBRATION STANDARDS 24
TABLE 4-1: SIGNIFICANCE OF NOISE IMPACTS AT NOISE-SENSITIVE RECEIVERS 26
TABLE 4-2: SIGNIFICANCE CRITERIA SUMMARY 28
TABLE 5-1: 24-HOUR AMBIENT NOISE LEVEL MEASUREMENTS 31
TABLE 6-1: OFF-SITE ROADWAY PARAMETERS 34
TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES 35
TABLE 6-3: TIME OF DAY VEHICLE SPLITS 35
TABLE 6-4: DISTRIBUTION OF TRAFFIC FLOW BY VEHICLE TYPE (VEHICLE MIX) 36
TABLE 6-5: SOIL IMPORT/EXPORT HAUL TRUCK AVERAGE DAILY TRAFFIC VOLUMES 36
TABLE 6-6: WITHOUT SOIL IMPORT/EXHPORT HAUL TRUCK TRIPS (VEHICLE MIX) 36
TABLE 6-7: WITH SOIL IMPORT/EXHPORT HAUL TRUCK TRIPS (VEHICLE MIX) 37
TABLE 6-8: ON-SITE ROADWAY PARAMETERS 37
TABLE 6-9: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT 38
TABLE 7-1: EXISTING WITHOUT PROJECT CONDITIONS NOISE CONTOURS 40
TABLE 7-2: EXISTING WITH PROJECT CONDITIONS NOISE CONTOURS 41
TABLE 7-3: INTERIM YEAR 2021 WITHOUT PROJECT CONDITIONS NOISE CONTOURS 42
TABLE 7-4: INTERIM YEAR 2021 WITH PROJECT CONDITIONS NOISE CONTOURS 43
TABLE 7-5: HORIZON YEAR 2035 WITHOUT PROJECT CONDITIONS NOISE CONTOURS 44
TABLE 7-6: HORIZON YEAR 2035 WITH PROJECT CONDITIONS NOISE CONTOURS 45
TABLE 7-7: EXISTING OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS 47
TABLE 7-8: INTERIM YEAR 2021 OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS 48
TABLE 7-9: HORIZON YEAR 2035 OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS 49
TABLE 7-10: EXISTING OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS 52
TABLE 8-1: UNMITIGATED EXTERIOR TRAFFIC NOISE LEVELS 53
TABLE 8-2: EXTERIOR TRAFFIC NOISE LEVELS AT THE BUILDING FACADE 54
TABLE 8-3: INTERIOR NOISE LEVELS (CNEL) 55

TABLE 10-1: REFERENCE NOISE LEVEL MEASUREMENTS 61
TABLE 10-2: UNMITIGATED PROJECT OPERATIONAL NOISE LEVELS 66
TABLE 10-3: OPERATIONAL NOISE LEVEL COMPLIANCE 68
TABLE 10-4: PROJECT DAYTIME OPERATIONAL NOISE CONTRIBUTIONS 69
TABLE 10-5: PROJECT NIGHTTIME OPERATIONAL NOISE CONTRIBUTIONS 69
TABLE 11-1: CONSTRUCTION REFERENCE NOISE LEVELS 73
TABLE 11-2: SOIL IMPORT/EXPORT ACTIVITY NOISE LEVELS (DAYTIME) 75
TABLE 11-3: SOIL IMPORT/EXPORT ACTIVITY NOISE LEVELS (NIGHTTIME) 76
TABLE 11-4: SOIL IMPORT/EXPORT NOISE COMPLIANCE (DAYTIME) 77
TABLE 11-5: SOIL IMPORT/EXPORT NOISE COMPLIANCE (NIGHTTIME) 78
TABLE 11-6: GRADING ACTIVITY NOISE LEVELS 79
TABLE 11-7: BUILDING CONSTRUCTION ACTIVITY NOISE LEVELS 80
TABLE 11-8: PAVING ACTIVITY NOISE LEVELS 81
TABLE 11-9: ARCHITECTURAL COATING ACTIVITY NOISE LEVELS 82
TABLE 11-10: CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY 82
TABLE 11-11: CONSTRUCTION EQUIPMENT NOISE LEVEL COMPLIANCE 83
TABLE 11-12: CONSTRUCTION EQUIPMENT VIBRATION LEVELS 84

LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
INCE	Institute of Noise Control Engineering
L_{eq}	Equivalent continuous (average) sound level
L_{max}	Maximum level measured over the time interval
L_{min}	Minimum level measured over the time interval
mph	Miles per hour
PPV	Peak Particle Velocity
Project	Bedford Marketplace
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the noise exposure and the necessary noise mitigation measures for the proposed Bedford Marketplace development ("Project") an expansion of the previously approved commercial development area included within the Arantine Hills Specific Plan. The 80,000 square feet (sf) of commercial retail use included in the Arantine Hills Specific Plan was evaluated in prior studies prepared for amendments to the Arantine Hills Specific Plan. The proposed Project represents the expansion of Bedford Marketplace from 80,000 sf to 135,000 sf of retail uses and a 135-room hotel. Consistent with the *Bedford Marketplace Traffic Study* (1) prepared by Urban Crossroads, Inc., the incremental expansion of Bedford Marketplace constitutes the "Project" analyzed in this study. Reference to "Bedford Marketplace" includes the total development of the center, equal to the combination of the proposed Project and the previously approved 80,000 sf in the Arantine Hills Specific Plan. The Project site is located south of Eagle Glen Parkway – Cajalco Road and west of the I-15 Freeway in the City of Corona

This study has been prepared consistent with applicable City of Corona noise standards, and significance criteria based on guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (2)

OFF-SITE PROJECT TRAFFIC NOISE ANALYSIS

Traffic generated by the operation of the proposed Project will influence the traffic noise levels in surrounding off-site areas. To quantify the off-site traffic noise increases on the surrounding off-site areas, the changes in traffic noise levels on 21 roadway segments surrounding the Project site were calculated based on the change in the average daily traffic (ADT) volumes. The traffic noise levels provided in this analysis are based on the traffic forecasts found in *Bedford Marketplace Traffic Study*. (1) To assess the off-site noise level impacts associated with the proposed Project, noise contour boundaries were developed for Existing, Interim Year 2021, and Horizon Year 2035 traffic conditions. The analysis shows that the unmitigated Project-related traffic noise level increases under all traffic scenarios will be *less than significant*.

SOIL IMPORT/EXPORT HAUL TRUCK OFF-SITE TRAFFIC NOISE ANALYSIS

To bring the Modified Bedford Marketplace Project Site up to an elevation similar (within five feet) of the existing 10-acre commercial pad, import of approximately 440,000 cubic yards of dirt is required. The import operation is expected to include 250 full loads per night, assuming 15 cubic yards per load, for a total of 3,750 cubic yards per night. To import 440,000 cubic yards, approximately 118 nights of import would be required.

The Project proposes to import dirt during the hours (8:00 p.m. to 4:00 a.m.) and complete grading operations both during daytime and nighttime hours. A source of import has been identified from the FST Sand and Gravel Mine, located east of the I-15 Freeway. The dirt would be hauled from the borrow site on Minnesota Road to Sherborn Street to Magnolia Avenue to the I-15 Freeway southbound on ramp at Magnolia Avenue, exit at Cajalco Road and enter the

Modified Project Site by crossing Cajalco Road from the southbound off-ramp with traffic control. Trucks would return onto Cajalco Road, enter I-15 Freeway northbound to Magnolia Avenue to Sherborn Street and travel south to the borrow site.

The proposed soil import/export haul route was specially developed to avoid potentially significant impacts to potential noise sensitive residential land uses. The off-site soil import/export analysis shows that Project haul truck trip will generate a noise level increase ranging from 0.2 dBA CNEL on the I-15 Freeway to 5.4 dBA CNEL on Sherborn Street. A review of the haul route shows that the only adjacent noise sensitive residential land uses are located adjacent to the I-15 Freeway. Many of the noise sensitive residential land uses near the I-15 Freeway benefit from existing Caltrans sound walls that have been developed to reduce traffic noise. Based on the significance criteria outlined above, the Project soil import/export truck trip-related noise level increases are considered *less than significant* impacts at the land uses adjacent to roadways conveying Project haul truck traffic.

ON-SITE TRAFFIC NOISE IMPACTS

An on-site exterior noise impact analysis has been completed to determine the traffic noise exposure and to identify potential necessary noise abatement measures for the proposed Bedford Marketplace Project. It is expected that the primary source of noise impacts to the Project site will be traffic noise from the I-15 Freeway. To control transportation related noise sources, the City of Corona has adopted exterior and interior noise standards by land use type.

EXTERIOR NOISE

The City of Corona has adopted an exterior noise standard of 65 dBA CNEL for noise sensitive land uses. The exterior noise standards typically apply to outdoor areas where people congregate. The only noise sensitive outdoor area in the proposed Bedford Marketplace is the outdoor pool area. The City of Corona does not identify any exterior noise standards for any of the commercial land use activities such as the outdoor patio areas for proposed restaurant uses. The on-site traffic noise level impacts indicate that outdoor hotel pool area will experience unmitigated exterior noise levels of 52.3 dBA CNEL. Since the unmitigated on-site traffic noise levels satisfy the City of Corona 65 dBA CNEL exterior noise level standards, the on-site traffic noise level impacts are considered as *less than significant*.

INTERIOR NOISE

To satisfy the City of Corona 45 dBA CNEL interior noise level criteria for noise sensitive land use, hotel rooms facing the I-15 Freeway will require a Noise Level Reduction (NLR) of up to 26.5 dBA and a windows closed condition requiring a means of mechanical ventilation (e.g. air conditioning). In order to meet the City of Corona 45 dBA CNEL interior noise standards, the Project shall provide a minimum STC ratings of 30 for windows facing the I-15 Freeway. With the recommended upgraded windows, the future on-site interior traffic noise impacts are expected to meet the City of Corona 45 dBA CNEL interior noise level standards and will be *less than significant*.

PROJECT OPERATIONAL NOISE ANALYSIS

Using reference noise levels to represent the expected noise sources from the Bedford Marketplace site, this analysis estimates the Project-related stationary-source noise levels at nearby sensitive receiver locations. The normal activities associated with the proposed Bedford Marketplace are anticipated to include roof-top air conditioning units, drive-thru speakerphones, trash enclosures, parking lots, gas station activity, car wash tunnel, car wash vacuums, and outdoor playground activity.

The analysis shows that the Project-related operational noise levels will satisfy the City of Corona daytime and nighttime exterior noise level standards at the closest noise-sensitive receiver locations in the Project study area. Therefore, the operational noise impacts are considered *less than significant* at all receiver locations. In addition, the project operational noise level contribution analysis shows Project-related incremental noise level increase to the ambient noise environment would be *less than significant* at all receiver locations.

SOIL IMPORT/EXPORT CONSTRUCTION NOISE ANALYSIS

The applicant has identified two potential borrow sites to provide the necessary fill dirt. The FST Sand and Gravel Mine, located east of the I-15 Freeway and the Arantine Hills Specific Plan Phase 2B site.

FST SAND AND GRAVEL MINE BORROW SITE

During the nighttime hours, dirt would be imported to the Modified Project Site, dumped, and placed by grading equipment. Daytime grading activities would initially last for approximately two weeks and begin before import and overlap with initial import operations. The daytime activities include remedial grading, which requires the over-excavation of approximately four to six feet below existing ground surface. The over-excavated material would be stockpiled on site. Additional daytime grading would occur after imported material has be placed in the over-excavated areas to bring the site closer to proposed grades. The stockpiled material would then be placed over the imported material to create the finished building pad, compacted to meet geotechnical specifications.

According to the Project applicant, every effort will be made to limit on-site construction activities particularly during the noise sensitive nighttime hours. For this reason, the Applicant is proposing to limit nighttime operations to permit only the essential equipment needed to support the soil import/export haul truck operations. The results of the soil import/export construction noise analysis, all nearby receiver locations will experience *less than significant* impacts due to the daytime and nighttime soil import/export noise construction noise levels at the Project site.

PHASE 2B BORROW SITE

Preliminary estimates suggest that the existing Phase 2B site will be lowered by approximately 13 feet to provide the necessary supply of dirt for import. Unlike the FST Sand and Gravel Mine borrow site, Phase 2B will not require any off-site haul trucks. In addition, due to the proximity of Phase 2B to the Bedford Marketplace, import of dirt will limited to the daytime hours from 7:00 a.m. to 7:00 p.m.

SOIL IMPORT/EXPORT CONSTRUCTION NOISE ANALYSIS (DAYTIME)

The analysis shows that either borrow site will satisfy the City of Corona maximum acceptable threshold for determining the impacts due to Project construction for sensitive receiver's daytime exterior noise level of 75 dBA L_{max}. Therefore, based on the results of the analysis, all nearby receiver locations will experience *less than significant* impacts due to the daytime soil import/export noise construction noise levels at the Project site.

SOIL IMPORT/EXPORT CONSTRUCTION NOISE ANALYSIS (NIGHTTIME)

The estimated Project nighttime construction noise levels from the import of dirt from the FST Sand and Gravel Mine will satisfy the City of Corona 50 dBA L_{max} stationary source nighttime noise level thresholds at all receiver locations. Therefore, based on the results of the analysis, all nearby receiver locations will experience *less than significant* impacts due to the nighttime soil import/export noise construction noise levels at the Project site. However, planned nighttime Project soil import/export activity will require a noise variance consistent with the provisions outlined in the City of Corona Municipal Code Section 17.84.040(H)(1) to perform the evening and nighttime grading activities

PROJECT SITE CONSTRUCTION NOISE ANALYSIS

Construction-related noise impacts are expected to create temporary and intermittent high-level noise conditions at receivers surrounding the Project site when certain activities occur at the Project site boundary. Using sample reference noise levels to represent the planned construction activities of the Bedford Marketplace site, this analysis estimates the Project-related construction noise levels at nearby sensitive receiver locations. The analysis shows that the Project-related short-term construction noise levels, are expected to approach 63.9 dBA L_{max} and will not exceed the 75 dBA L_{max} construction noise level threshold at the nearby sensitive receiver locations. Therefore, based on the results of this analysis, all nearby sensitive receiver locations will experience *less than significant* impacts due to Project site construction noise levels.

SUMMARY OF CEQA SIGNIFICANCE FINDINGS

The results of this Bedford Marketplace Noise Impact Analysis are summarized below based on the significance criteria in Section 4 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (2).

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	**Mitigated**
Off-Site Traffic Noise Levels	7	*Less Than Significant*	*n/a*
Soil Import/Export Haul Trucks		*Less Than Significant*	*n/a*
On-Site Exterior Traffic Noise Levels	8	*Less Than Significant*	*n/a*
On-Site Interior Traffic Noise Levels		*Less Than Significant*	*n/a*
Operational Noise Levels	10	*Less Than Significant*	*n/a*
Soil Import/Export Construction	11	*Less Than Significant*	*n/a*
Construction Noise Levels		*Less Than Significant*	*n/a*
Construction Vibration Levels		*Less Than Significant*	*n/a*

This page intentionally left blank

1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Bedford Marketplace ("Project") an expansion of the previously approved commercial development area included within the Arantine Hills Specific Plan. The 80,000 square feet (sf) of commercial retail use included in the Arantine Hills Specific Plan was evaluated in prior studies prepared for amendments to the Arantine Hills Specific Plan. The proposed Project represents the expansion of Bedford Marketplace from 80,000 sf to 135,000 sf of retail uses and a 135-room hotel. Consistent with the *Bedford Marketplace Traffic Study* (1) prepared by Urban Crossroads, Inc., the incremental expansion of Bedford Marketplace constitutes the "Project" analyzed in this study. Reference to "Bedford Marketplace" includes the total development of the center, equal to the combination of the proposed Project and the previously approved 80,000 sf in the Arantine Hills Specific Plan. Based on the currently approved commercial trip generation in the Arantine Hills Traffic Assessment (November 2018), the Project is anticipated to generate an additional 2,061 external trips per day.

This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, describes the local regulatory setting, provides the study methods and procedures for transportation noise analysis, soil import/export haul traffic noise and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential Project-related long-term operational noise and short-term construction noise and vibration impacts.

1.1 SITE LOCATION

The Project site is located south of Eagle Glen Parkway – Cajalco Road and west of the I-15 Freeway in the City of Corona as shown on Exhibit 1-A. The Project site is currently vacant. Nearby existing residential land uses are located north, west, and south of the Project site. Commercial land uses near the Project site are located to the north at the I-15 Freeway southbound off-ramp, and east of the I-15 Freeway north of Cajalco Road. The Corona Municipal Airport is located approximately 6.5 miles northwest of the Project site.

1.2 BEDFORD MARKETPLACE LAND USE DESCRIPTION

The Bedford Marketplace site plan (shown on Exhibit 1-B) expands the approved commercial site and is proposed to consist of the following uses:

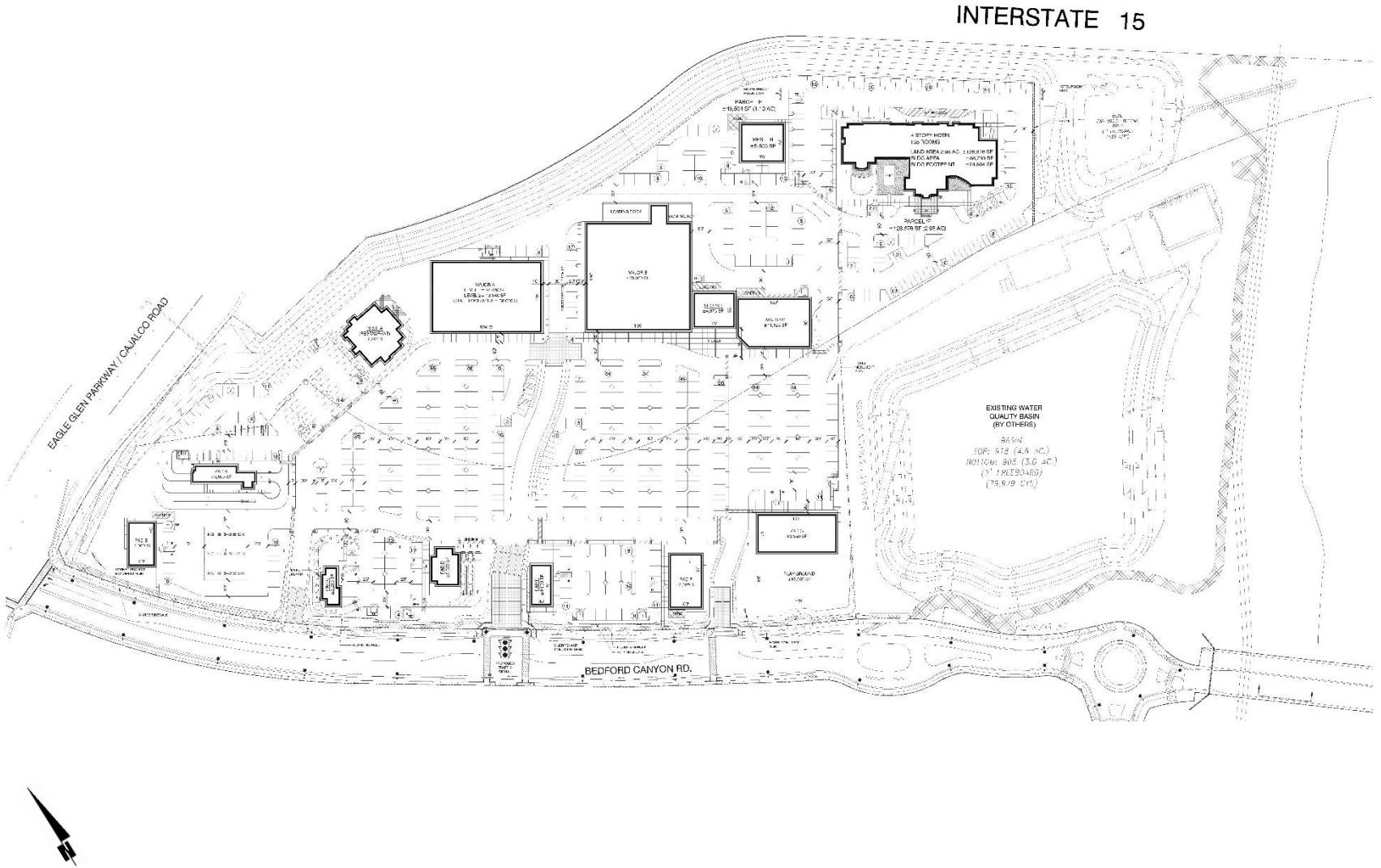
- Hotel - 135 rooms
- Health/fitness club - 38,000 sf
- Day Care Center - 9,990 sf
- Retail Shopping Center – 51,000 sf
- Bank – 6,562 sf
- Restaurant – 21,230 sf
- Gas Station – 18 vehicle fueling positions (vfp's)
- Automated Car Wash – 3,600 sf

The on-site Project-related noise sources are expected to include: roof-top air conditioning units, drive-thru speakerphones, trash enclosures, parking lots, gas station activity, car wash tunnel, car wash vacuums, and outdoor playground activity. This noise analysis is intended to describe noise level impacts associated with the expected typical, 24-hour seven days per week operational activities at the Project site.

EXHIBIT 1-A: LOCATION MAP



EXHIBIT 1-B: BEDFORD MARKETPLACE SITE PLAN



This page intentionally left blank

2 FUNDAMENTALS

Noise has been simply defined as "unwanted sound." Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear. Exhibit 2-A presents a summary of the typical noise levels and their subjective loudness and effects that are described in more detail below.

EXHIBIT 2-A: TYPICAL NOISE LEVELS

COMMON OUTDOOR ACTIVITIES	COMMON INDOOR ACTIVITIES	A - WEIGHTED SOUND LEVEL dBA	SUBJECTIVE LOUDNESS	EFFECTS OF NOISE
THRESHOLD OF PAIN		140	INTOLERABLE OR DEAFENING	HEARING LOSS
NEAR JET ENGINE		130		
		120		
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100	VERY NOISY	
GAS LAWN MOWER AT 1m (3 ft)		90		
DIESEL TRUCK AT 15m (50 ft), at 80 km/hr (50 mph)	FOOD BLENDER AT 1m (3 ft)	80		SPEECH INTERFERENCE
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70	LOUD	
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60		
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50	MODERATE	SLEEP DISTURBANCE
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		
QUIET SUBURBAN NIGHTTIME	LIBRARY	30	FAINT	NO EFFECT
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20		
	BROADCAST/RECORDING STUDIO	10	VERY FAINT	
LOWEST THRESHOLD OF HUMAN HEARING	LOWEST THRESHOLD OF HUMAN HEARING	0		

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (3) The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA at approximately 100 feet, which can cause serious discomfort. (4) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most commonly used figure is the equivalent level (L_{eq}). Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period and is commonly used to describe the "average" noise levels within the environment.

To describe the time-varying character of environmental noise, the statistical or percentile noise descriptors L_{50}, L_{25}, L_8 and L_2, are commonly used. The percentile noise descriptors are the noise levels equaled or exceeded during 50 percent, 25 percent, 8 percent and 2 percent of a stated time. Sound levels associated with the L_2 and L_8 typically describe transient or short-term events, while levels associated with the L_{50} describe the steady state (or median) noise conditions. The City of Corona relies on the percentile noise levels to describe the stationary source noise level limits. While the L_{50} describes the noise levels occurring 50 percent of the time, the L_{eq} accounts for the total energy (average) observed for the entire hour.

Peak hour or average noise levels, while useful, do not completely describe a given noise environment. Noise levels lower than peak hour may be disturbing if they occur during times when quiet is most desirable, namely evening and nighttime (sleeping) hours. To account for this, the Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level is utilized. The CNEL is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time of day corrections require the addition of 5 decibels to dBA L_{eq} sound levels in the evening from 7:00 p.m. to 10:00 p.m., and the addition of 10 decibels to dBA L_{eq} sound levels at night between 10:00 p.m. and 7:00 a.m. These additions are made to account for the noise sensitive time periods during the evening and night hours when sound appears louder. CNEL does not represent the actual sound level heard at any time, but rather represents the total sound exposure. The City of Corona relies on the 24-hour CNEL level to assess land use compatibility with transportation related noise sources.

2.3 SOUND PROPAGATION

When sound propagates over a distance, it changes in level and frequency content. The way noise reduces with distance depends on the following factors.

2.3.1 GEOMETRIC SPREADING

Sound from a localized source (i.e., a stationary point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source. (3)

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source. (5)

2.3.3 ATMOSPHERIC EFFECTS

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects. (3)

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an “out of sight, out of mind” effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearby resident. However, for vegetation to provide a substantial, or even noticeable, noise reduction, the vegetation area must be at least 15 feet in height, 100 feet wide and dense enough to completely obstruct the line-of sight between the source and the receiver. This size of vegetation may provide up to 5 dBA of noise reduction. The FHWA does not consider the planting of vegetation to be a noise abatement measure. (5)

2.4 NOISE CONTROL

Noise control is the process of obtaining an acceptable noise environment for an observation point or receiver by controlling the noise source, transmission path, receiver, or all three. This concept is known as the source-path-receiver concept. In general, noise control measures can be applied to these three elements.

2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by up to 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receiver. Noise barriers, however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the path of the noise source. (5)

2.6 LAND USE COMPATIBILITY WITH NOISE

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process. The FHWA encourages State and Local government to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized. (6)

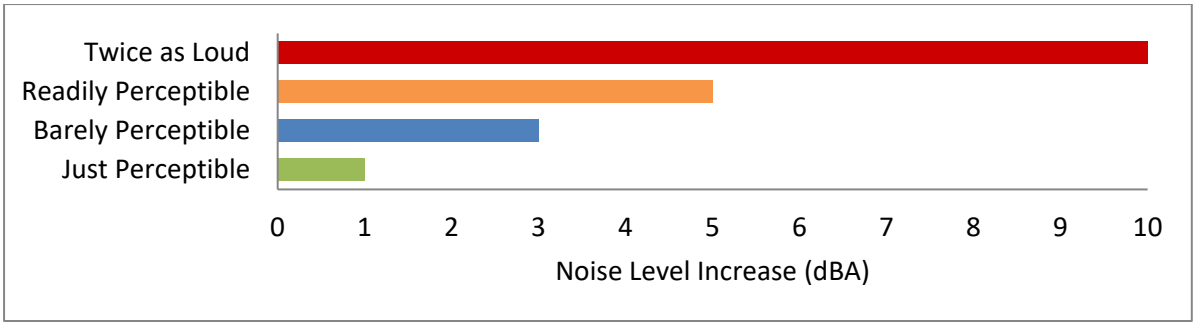
2.7 COMMUNITY RESPONSE TO NOISE

Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, depending upon everyone's susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

- Fear associated with noise producing activities;
- Socio-economic status and educational level;
- Perception that those affected are being unfairly treated;
- Attitudes regarding the usefulness of the noise-producing activity;
- Belief that the noise source can be controlled.

Approximately ten percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints will occur. Another twenty-five percent of the population will not complain even in very severe noise environments. Thus, a variety of reactions can be expected from people exposed to any given noise environment. (7) Surveys have shown that about ten percent of the people exposed to traffic noise of 60 dBA will report being highly annoyed with the noise, and each increase of one dBA is associated with approximately two percent more people being highly annoyed. When traffic noise exceeds 60 dBA or aircraft noise exceeds 55 dBA, people may begin to complain. (7) Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. A change of 3 dBA are considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*. (5)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



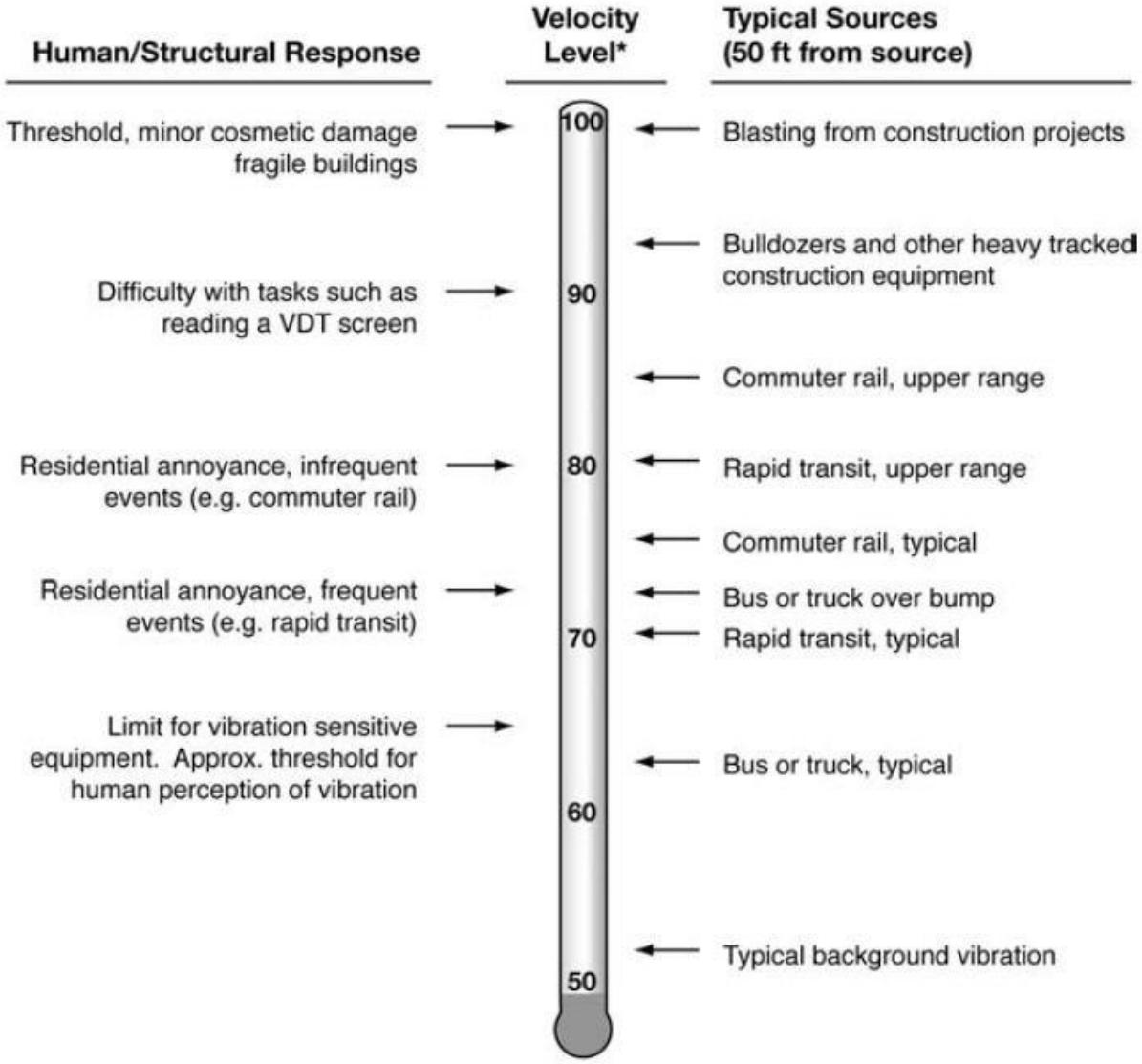
2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise Impact and Vibration Assessment*, vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings but is not always suitable for evaluating human response (annoyance) because it takes some time for the human body to respond to vibration signals. Instead, the human body responds to average vibration amplitude often described as the root mean square (RMS). The RMS amplitude is defined as the average of the squared amplitude of the signal and is most frequently used to describe the effect of vibration on the human body. Decibel notation (VdB) is commonly used to measure RMS. Decibel notation (VdB) serves to reduce the range of numbers used to describe human response to vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receivers for vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration-sensitive equipment and/or activities.

The background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Exhibit 2-C illustrates common vibration sources and the human and structural response to ground-borne vibration.

EXHIBIT 2-C: TYPICAL LEVELS OF GROUND-BORNE VIBRATION



* *RMS Vibration Velocity Level in VdB relative to 10^{-6} inches/second*

Source: Federal Transit Administration (FTA) Transit Noise Impact and Vibration Assessment.

3 REGULATORY SETTING

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise. In most areas, automobile and truck traffic is the major source of environmental noise. Traffic activity generally produces an average sound level that remains constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas. Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies.

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research (OPR). (8) The purpose of the Noise Element is to *limit the exposure of the community to excessive noise levels*. In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

3.2 STATE OF CALIFORNIA GREEN BUILDING STANDARDS CODE

The State of California's Green Building Standards Code contains mandatory measures for non-residential building construction in Section 5.507 on Environmental Comfort. (9) These noise standards are applied to new construction in California for controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when non-residential structures are developed in areas where the exterior noise levels exceed 65 dBA CNEL, such as within a noise contour of an airport, freeway, railroad, and other areas where noise contours are not readily available. If the development falls within an airport or freeway 65 dBA CNEL noise contour, the combined sound transmission class (STC) rating of the wall and roof-ceiling assemblies must be at least 50. For those developments in areas where noise contours are not readily available, and the noise level exceeds 65 dBA L_{eq} for any hour of operation, a wall and roof-ceiling combined STC rating of 45, and exterior windows with a minimum STC rating of 40 are required (Section 5.507.4.1).

3.3 CITY OF CORONA GENERAL PLAN PUBLIC HEALTH AND SAFETY ELEMENT

The City of Corona has adopted a Noise section in its Public Health and Safety Element of the General Plan to control and abate environmental noise, and to protect the citizens of the City of Corona from excessive exposure to noise. (10) The Public Health and Safety Element specifies the maximum allowable exterior noise levels for new developments impacted by transportation noise sources such as arterial roads, freeways, airports and railroads. In addition, the Public

Health and Safety Element identifies several polices to minimize the impacts of excessive noise levels throughout the community and establishes noise level requirements for all land uses. To protect City of Corona residents from excessive noise, the Public Health and Safety Element contains the following six goals:

11.4 Ensure that appropriate actions are taken to protect residents, visitors, and noise-sensitive land uses from adverse human health and environmental impacts created by excessive noise levels from ambient sources.

11.5 Prevent and mitigate the adverse impacts of excessive ambient noise exposure on residents, employees, visitors, and noise-sensitive land uses within the City of Corona.

11.6 Provide sufficient information concerning community noise levels to ensure that noise can be objectively considered and incorporated into land use planning.

11.7 Provide for the reduction of noise spillover or encroachment where the noise environment from commercial and industrial land uses is unacceptable; and protect and maintain adjoining residential areas and other noise-sensitive areas having acceptable noise environments.

11.8 Minimize potentially adverse noise impacts associated with the development of mixed-use structures in which residential dwelling units are proposed above ground floor commercial or institutional uses.

11.9 Minimize noise impacts created by the Santa Fe railroad transit on residential areas and other noise-sensitive land use areas.

To protect its residents, visitors, and noise-sensitive land uses from high levels of noise (Goal 11.4), Table 4 of the Public Health and Safety Element identifies guidelines to evaluate proposed developments based on exterior and interior noise level limits for land uses. The Public Health and Safety Element requires new developments in areas where existing ambient exterior noise levels already exceed 65 dBA CNEL to include satisfactory buffering or construction mitigation measures to reduce noise impacts to levels lower than the standards found in Table 5 (Goal 11.5). To satisfy Goal 11.6, the City will maintain its Noise Ordinance and noise regulations to incorporate noise considerations into land use planning decisions for future incompatibilities. The intent of Goal 11.7 is to require new commercial and industrial uses to include mitigation measures in the site design in order to reduce impacts to neighboring noise-sensitive land uses. To mitigate the noise from mixed-use development (Goal 11.8), the Public Health and Safety Element requires mixed-use structures to incorporate noise reducing design elements and prohibits high noise-generating uses below or near residential land uses unless a noise analysis can demonstrate appropriate noise mitigation is attainable. Goal 11.9 seeks to prevent current and future operations of the Santa Fe railroad from impacting noise-sensitive land uses through rail line maintenance, noise mitigation features, and lower speed limits during early morning and late evening hours. (10)

3.3.1 LAND USE COMPATIBILITY

The noise criteria identified in the City of Corona Public Health and Safety Element (Table 4) are guidelines to evaluate the land use compatibility of transportation related noise. The compatibility criteria, shown on Exhibit 3-A, provides the City with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels

The *Land Use Noise Compatibility Matrix* describes categories of compatibility and not specific noise standards. The proposed Bedford Marketplace contains a hotel, health/fitness club, day care center, retail shopping center, bank, restaurants, gas station and automated car wash uses.

These general commercial land uses are considered *clearly compatible* with unmitigated exterior noise levels of less than 60 dBA CNEL, *normally compatible* with unmitigated exterior noise levels approaching 70 dBA CNEL and *normally incompatible* with unmitigated exterior noise levels approaching 80 dBA CNEL. For *normally incompatible* land use, *new construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design.*

3.3.2 ON-SITE TRANSPORTATION NOISE STANDARDS

The City of Corona General Plan Public Health and Safety Element specifies the maximum noise levels allowable for new developments impacted by transportation noise sources such as arterial roads, freeways, airports and railroads.

For noise-sensitive uses, Table 5 *Interior and Exterior Noise Standards* of the Public Health and Safety Element indicates that the exterior noise levels shall not exceed 65 dBA CNEL and interior noise levels of 45 dBA CNEL. The 65 dBA CNEL exterior noise standards typically apply to outdoor areas where people congregate. In relation to the proposed Bedford Marketplace, the 65 dBA CNEL exterior noise standards apply only to the hotel outdoor pool area. The City of Corona does not identify any exterior noise standards for other commercial land use activities such as restaurant outdoor patio areas. The City of Corona transportation noise standards are shown on Exhibit 3-B.

EXHIBIT 3-A: LAND USE NOISE COMPATIBILITY MATRIX

Land Use Categories		*Community Noise Equivalent Level CNEL*						
Categories	*Uses*	*<55*	*60*	*65*	*70*	*75*	*80>*	
RESIDENTIAL	Single Family, Duplex	A	A	B	B	D	D	D
	Multiple Family	A	A	B	B	C	D	D
RESIDENTIAL	Mobile Home	A	A	B	C	C	D	D
COMMERCIAL Regional, District	Hotel, Motel Transient Lodging	A	A	B	B	C	C	D
COMMERCIAL Regional, Village District, Special	Commercial Retail, Bank, Restaurant, Movie Theatre	A	A	A	A	B	B	C
COMMERCIAL OFFICE INSTITUTIONAL	Office Building, Research and Development, Professional Offices, City Office Building	A	A	A	B	B	C	D
COMMERCIAL Recreation INSTITUTIONAL Civic Center	Amphitheatre, Concert Hall Auditorium, Meeting Hall	B	B	C	C	D	D	D
COMMERCIAL Recreation	Children's Amusement Park, Miniature Golf Course, Go-cart Track, Equestrian Center, Sports Club	A	A	A	B	B	D	D
COMMERCIAL General, Special INDUSTIRAL, INSTITUTIONAL	Automobile Service Station, Auto Dealership, Manufacturing, Warehousing, Wholesale, Utilities	A	A	A	A	B	B	B
INSTITUTIONAL General	Hospital, Church, Library, Schools' Classroom	A	A	B	C	C	D	D
OPEN SPACE	Parks	A	A	A	B	C	D	D
OPEN SPACE	Golf Course, Cemeteries, Nature Centers Wildlife Reserves, Wildlife Reserves, Wildlife Habitat	A	A	A	A	B	C	C
AGRICULTURE	Agriculture	A	A	A	A	A	A	A

Interpretation

Zone A Clearly Compatible	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.
Zone B Normally Compatible	New construction or development should be undertaken only after detailed analysis of the noise reduction requirements are made and needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice. Note that residential uses are prohibited with airport CNEL greater than 65.
Zone C Normally Incompatible	New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design.
Zone D Clearly Incompatible	New construction of development should generally not be undertaken.

EXHIBIT 3-B: INTERIOR AND EXTERIOR NOISE STANDARDS

Land Use Categories		Energy Average CNEL	
Categories	Uses	Interior[1]	Exterior[2]
RESIDENTIAL	Single Family, Duplex, Multiple Family	45[3]	65
	Mobile Home	NA	65[4]
COMMERCIAL INDUSTRIAL INSTITUTIONAL	Hotel, Motel, Transient Lodging	45	65[5]
	Commercial Retail, Bank, Restaurant	55	NA
	Office Building, Research and Development, Professional Offices, City Office Building	50	NA
	Amphitheatre, Concert Hall Auditorium, Meeting Hall	45	NA
	Gymnasium (Multipurpose)	50	NA
	Sports Club	55	NA
	Manufacturing, Warehousing, Wholesale, Utilities	65	NA
	Movie Theatres	45	NA
INSTITUTIONAL	Hospital, Schools' classroom	45	65
	Church, Library	45	NA
OPEN SPACE	Parks	NA	65

INTERPRETATION

1. Indoor environment excluding bathrooms, toilets, closets, corridors.
2. Outdoor environment limited to:
   - Private yard of single family
   - Multi-family private patio or balcony that is served by a means of exit from inside
   - Mobile home park
   - Hospital patio
   - Park's picnic area
   - School's playground
   - Hotel and motel recreation area
3. Noise level requirement with closed windows. Mechanical ventilating system or other means of natural ventilation shall be provided as of Chapter 12, Section 1205 of UBC.
4. Exterior noise level should be such that interior noise level will not exceed 45 CNEL
5. Except those areas affected by aircraft noise.

3.4 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the Bedford Marketplace, operational source noise such as roof-top air conditioning units, drive-thru speakerphones, trash enclosures, parking lots, gas station activity, car wash tunnel, car wash vacuums, and outdoor playground activity are typically evaluated against standards established under a City's Municipal Code.

3.4.1 CITY OF CORONA OPERATIONAL NOISE STANDARDS

The City of Corona Municipal Code, Section 17.84.040 *Noise*, provides noise control guidelines for determining and mitigating non-transportation or stationary-source noise impacts from operations at private properties. The City of Corona Municipal Code defines *Stationary Noise Source Standards* in Section 17.84.040(C)(2), Table 1, for different land uses. For noise-sensitive residential properties, the Municipal Code identifies operational noise level limits for the daytime (7:00 a.m. to 10:00 p.m.) hours of 55 dBA L_{50} and 50 dBA L_{50} during the nighttime (10:00 p.m. to 7:00 a.m.) hours. (11) These standards shall apply for a cumulative period of 30 minutes in any hour, as well as plus 5 dBA cannot be exceeded for a cumulative period of more than 15 minutes in any hour, or the standard plus 10 dBA for a cumulative period of more than 5 minutes in any

hour, or the standard plus 15 dBA for a cumulative period of more than 1 minute in any hour, or the standard plus 20 dBA for any period of time. The City of Corona Municipal Code noise standards are shown on Table 3-1 and included in Appendix 3.1.

TABLE 3-1: OPERATIONAL NOISE STANDARDS

Jurisdiction	Land Use	Time Period	Exterior Noise Level Standards (dBA Leq)[2]				
			L_{50} (30 mins)	L_{25} (15 mins)	L_8 (5 mins)	L_2 (1 min)	L_{max} (Anytime)
City of Corona[1]	Residential	Daytime	55.0	60.0	65.0	70.0	75.0
		Nighttime	50.0	55.0	60.0	65.0	70.0

[1] Source: City of Corona Municipal Code, Section 17.84.040 Noise (Appendix 3.1).
[2] The percent noise level is the level exceeded "n" percent of the time during the measurement period. L25 is the noise level exceeded 25% of the time.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

3.5 CONSTRUCTION NOISE STANDARDS

To analyze noise impacts originating from the construction of the Bedford Marketplace, noise from construction activities are typically evaluated against standards established under a City's Municipal Code. The construction-related noise standards for the City are summarized in Table 3-2.

3.5.1 CITY OF CORONA CONSTRUCTION NOISE STANDARDS

Section 17.84.040(D)(2) of the City of Corona Municipal Code, provided in Appendix 3.1, indicates that construction noise is prohibited between the hours of 8:00 p.m. to 7:00 a.m., Monday through Saturday and 6:00 p.m. to 10:00 a.m. on Sundays and federal holidays. (11) Construction noise is defined as noise which is disturbing, excessive or offensive and constitutes a nuisance involving discomfort or annoyance to persons of normal sensitivity residing in the area, which is generated by the use of any tools, machinery or equipment used in connection with construction operations. The City of Corona Municipal Code effectively considers construction noise as exempt if construction noise is limited to the permitted hours of activity.

However, neither the General Plan nor Municipal Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers, which would allow for a quantified determination of what CEQA constitutes a *substantial temporary or periodic noise increase*. To allow for a quantified determination of what the City of Corona Municipal Code constitutes as noise that *may be detrimental to the public health, safety or general welfare* due to Project construction activity, relevant stationary source noise standards established in Section 17.84.040(C)(2) Table 1, are used in this analysis to assess the Project construction noise levels at nearby sensitive receivers. Section 17.84.040(C)(2) Table 1 establishes a maximum allowable exterior noise level standard for residential land use of 55 dBA L_{50} for a cumulative period of more 30 minutes in any hour. This same noise standard limits the exterior noise levels to the noise standard (55 dBA) plus 20 dBA for any period of time. This effectively limits the maximum noise

level to 75 dBA L_{max} as shown on Table 3-1. Therefore, consistent with the City of Corona Municipal Code, an exterior noise level of 75 dBA L_{max} is used to describe the maximum acceptable threshold for determining the impacts due to Project construction for sensitive receivers. The City of Corona construction noise standards are shown on Table 3-2 and included in Appendix 3.1.

TABLE 3-2: CONSTRUCTION NOISE STANDARDS

Jurisdiction	Permitted Hours of Construction Activity	Construction Noise Level Standard
City of Corona[1]	7:00 a.m. to 8:00 p.m. Monday to Saturday; 10:00 a.m. to 6:00 p.m. on Sundays & Holidays.	75 dBA L_{max}

[1] Source: City of Corona Municipal Code, Section 17.84.040(D)(2) (Appendix 3.1).
[2] Acceptable construction noise threshold based on the maximum stationary source noise level standards shown on Table 3-1.

3.6 CONSTRUCTION VIBRATION STANDARDS

To analyze the vibration impacts originating from the construction of the Project, vibration from construction activities are typically evaluated against standards established under a City's Municipal Code.

3.6.1 CITY OF CORONA VIBRATION STANDARDS

The City of Corona Municipal Code, Section 17.84.050, identifies a vibration velocity standard of 0.05 in/sec root-mean-square (RMS) for sensitive land uses which is used in this analysis as the basis for determining the relative significance of potential Project related vibration impacts. (11) The City of Corona vibration standards are shown on Table 3-3 and included in Appendix 3.1.

3.6.2 HUMAN PERCEPTION OF VIBRATION

Typically, the human response at the perception threshold for vibration includes annoyance in residential areas as previously shown on Exhibit 2-B, when vibration levels expressed in vibration decibels (VdB) approach 75 VdB. The City of Corona, however, identifies a vibration perception threshold of 0.05 in/sec at or beyond the property line of the source land use. For vibration levels expressed in velocity, the human body responds to the average vibration amplitude often described as the root-mean-square (RMS). The RMS of a signal is the average of the squared amplitude of the signal, typically calculated over a one-second period. As with airborne sound, the RMS velocity is often expressed in decibel notation as vibration decibels (VdB), which serves to reduce the range of numbers used to describe human response to vibration. Therefore, the City of Corona vibration standard of 0.05 in/sec in RMS velocity levels is used in this analysis to assess the human perception of vibration levels due to Project-related construction activities.

TABLE 3-3: CONSTRUCTION VIBRATION STANDARDS

Jurisdiction	Root-Mean-Square Velocity Standard (in/sec)
City of Corona[1]	0.05

[1] Source: City of Corona Municipal Code, Section 17.84.050 Vibration (Appendix 3.1).

4 SIGNIFICANCE CRITERIA

The following significance criteria are based on currently adopted guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (2) For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

A. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

B. Generation of excessive ground-borne vibration or ground-borne noise levels?

C. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

While the City of Corona General Plan Guidelines provide direction on noise compatibility and establish noise standards by land use type that are sufficient to assess the significance of noise impacts, they do not define the levels at which increases are considered substantial for use under Guideline A. CEQA Appendix G Guideline C applies to nearby public and private airports, if any, and the Project's land use compatibility.

4.1 CEQA GUIDELINES NOT FURTHER ANALYZED

The Project site is located roughly 6.5 miles southeast of Corona Municipal Airport. Therefore, the Project site is not located within two miles of a public airport or the vicinity of a private airstrip, and as such, no impact related to the exposure of people residing or working in the Project area to excessive airport related noise levels is anticipated.

4.2 PROJECT RELATED NOISE LEVEL INCREASES

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines described above at the closest sensitive receiver locations. Under CEQA, consideration must be given to the magnitude of the increase, the existing ambient noise levels, and the location of noise-sensitive receivers to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes *that there is no single noise increase that renders the noise impact significant.* (12) Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding human reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment.

In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will typically be judged. The Federal Interagency Committee on Noise (FICON) (13) developed guidance to be used for the assessment of project-generated increases in noise levels that consider the ambient noise level. The FICON recommendations are based on

studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (CNEL) and equivalent continuous noise level (L_{eq}).

As previously stated, the approach used in this noise study recognizes *that there is no single noise increase that renders the noise impact significant*, based on a 2008 California Court of Appeal ruling on Gray v. County of Madera. (12) For example, if the ambient noise environment is quiet (<60 dBA) and the new noise source greatly increases the noise levels, an impact may occur if the noise criteria may be exceeded. Therefore, for this analysis, FICON identifies a *readily perceptible* 5 dBA or greater project-related noise level increase is considered a significant impact when the noise criteria for a given land use is exceeded. Per the FICON, in areas where the without project noise levels range from 60 to 65 dBA, a 3 dBA *barely perceptible* noise level increase appears to be appropriate for most people. When the without project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact if the noise criteria for a given land use is exceeded, since it likely contributes to an existing noise exposure exceedance. Table 4-1 below provides a summary of the potential noise impact significance criteria, based on guidance from FICON.

TABLE 4-1: SIGNIFICANCE OF NOISE IMPACTS AT NOISE-SENSITIVE RECEIVERS

Without Project Noise Level	Potential Significant Impact
< 60 dBA	5 dBA or more
60 - 65 dBA	3 dBA or more
> 65 dBA	1.5 dBA or more

Federal Interagency Committee on Noise (FICON), 1992.

4.3 SIGNIFICANCE CRITERIA SUMMARY

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development. The significance criteria are shown on Table 4-2.

OFF-SITE TRAFFIC NOISE

- When the noise levels at existing and future noise-sensitive land uses (e.g. residential, etc.):
    - are less than 60 dBA CNEL and the Project creates a *readily perceptible* 5 dBA CNEL or greater Project-related noise level increase; or
    - range from 60 to 65 dBA CNEL and the Project creates a *barely perceptible* 3 dBA CNEL or greater Project-related noise level increase; or
    - already exceed 65 dBA CNEL, and the Project creates a community noise level increase of greater than 1.5 dBA CNEL (FICON, 1992).

ON-SITE TRAFFIC NOISE

- If the on-site exterior noise levels exceed 65 dBA CNEL at the outdoor pool area of the hotel use. Interior noise levels shall not exceed 45 dBA CNEL for hotel uses and 55 dBA CNEL for all other commercial uses consistent with the General Plan Public Health and Safety Element interior and exterior noise standards. (See Exhibit 3-B).

OPERATIONAL NOISE

- If Project-related operational (stationary-source) noise levels:
    - exceed the exterior 55 dBA L_{50} daytime or 50 dBA L_{50} nighttime noise level standards for sensitive residential land uses. These standards shall not be exceeded for a cumulative period of 30 minutes (L_{50}), or plus 5 dBA cannot be exceeded for a cumulative period of more than 15 minutes (L_{25}) in any hour, or the standard plus 10 dBA for a cumulative period of more than 5 minutes (L_8) in any hour, or the standard plus 15 dBA for a cumulative period of more than 1 minute (L_2) in any hour, or the standard plus 20 dBA at any time (L_{max}) (City of Corona Municipal Code, Section 17.84.040).
- If the existing ambient noise levels at the nearby noise-sensitive receivers near the Project site:
    - are less than 60 dBA L_{50} and the Project creates a readily perceptible 5 dBA L_{50} or greater Project-related noise level increase; or
    - range from 60 to 65 dBA L_{50} and the Project creates a barely perceptible 3 dBA L_{50} or greater Project-related noise level increase; or
    - already exceed 65 dBA L_{50}, and the Project creates a community noise level increase of greater than 1.5 dBA L_{50} (FICON, 1992).

CONSTRUCTION NOISE

- If Project-related construction activities:
    - occur at any time other than between the permitted the hours of 7:00 a.m. and 8:00 p.m., Monday through Saturday, and 10:00 a.m. and 6:00 p.m. on Sundays and Federal holidays (City of Corona Municipal Code Section 17.84.040(D)(2)); or
    - create noise levels at sensitive residential receivers in the which exceed the short-term construction noise level limit of 75 dBA L_{max} (City of Corona Municipal Code Section 17.84.040).

CONSTRUCTION VIBRATION

- If short-term Project generated construction source vibration levels exceed the City of Corona maximum acceptable vibration standard of 0.05 in/sec at noise-sensitive receiver locations (City of Corona Municipal Code Section 17.84.050).

TABLE 4-2: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Receiving Land Use	Condition(s)	Significance Criteria	
			Daytime	Nighttime
Off-Site Traffic	Noise-Sensitive[1]	If ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase	
		If ambient is 60 - 65 dBA CNEL	≥ 3 dBA CNEL Project increase	
		If ambient is > 65 dBA CNEL	≥ 1.5 dBA CNEL Project increase	
On-Site Traffic[2]	Hotel	Exterior Noise Level Standard	65 dBA CNEL (hotel pool)	
		Interior Noise Level Standard	45 dBA CNEL	
	Commercial	Exterior Noise Level Standard	n/a	
		Interior Noise Level Standard	55 dBA CNEL	
Operational	Noise-Sensitive	Exterior Noise Level Standards[3]	See Table 3-1.	
Construction	Noise-Sensitive	Noise Level Threshold[3]	75 dBA L_{max}	n/a
		Vibration Level Threshold[4]	0.05 in/sec RMS	n/a

[1] Source: FICON, 1992.
[2] Source: Public Health & Safety Element Interior and Exterior Noise Standards (Exhibit 3-B).
[3] Source: City of Corona Municipal Code, Section 17.84.040 Noise (Appendix 3.1).
[4] Source: City of Corona Municipal Code, Section 17.84.050 Vibration (Appendix 3.1).
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.; "n/a" = No nighttime construction activity is permitted, so no nighttime construction noise level limits are identified; "RMS" = root-mean-square

5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at four locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Friday, August 2nd, 2019. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the daytime and nighttime hourly noise levels and calculate the 24-hour CNEL. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (14)

5.2 NOISE MEASUREMENT LOCATIONS

The long-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing ambient hourly noise levels surrounding the Project site. Both Caltrans and the FTA recognize that it is not reasonable to collect noise level measurements that can fully represent every part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines which indicate that, *sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources*. (3) Further, FTA guidance states, t*hat it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community*. (15)

Based on recommendations of Caltrans and the FTA, it is not necessary to collect measurements at each individual building or residence, because each receiver measurement represents a group of buildings that share acoustical equivalence. (15) In other words, the area represented by the receiver shares similar shielding, terrain, and geometric relationship to the reference noise source. Receivers represent a location of noise sensitive areas and are used to estimate the future noise level impacts. Collecting reference ambient noise level measurements at the nearby sensitive receiver locations allows for a comparison of the before and after Project noise levels

and is necessary to assess potential noise impacts due to the Project's contribution to the ambient noise levels.

5.3 NOISE MEASUREMENT RESULTS

The noise measurements presented below focus on the average or equivalent sound levels (L_{eq}). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. Table 5-1 identifies the hourly daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) noise levels at each noise level measurement location. Appendix 5.2 provides a summary of the existing hourly ambient noise levels described below:

- Location L1 represents the noise levels northwest of Project site on Eagle Glen Parkway and Bedford Canyon Road near existing residential homes. The noise levels at this location consist primarily of traffic noise from Glen Eagle Parkway and Bedford Canyon Road. The noise level measurements collected show an overall 24-hour exterior noise level of 71.4 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 67.3 dBA L_{eq} with an average nighttime noise level of 63.9 dBA L_{eq}.
- Location L2 represents the noise levels west of the Project site near existing vacant dirt lot. The ambient noise levels at this location account for the background traffic from Glen Eagle Parkway and Interstate 15 Freeway. The noise level measurements collected show an overall 24-hour exterior noise level of 62.7 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 57.3 dBA L_{eq} with an average nighttime noise level of 55.8 dBA L_{eq}.
- Location L3 represents the noise levels South of the project site on Glen Road and North Weirick Road near vacant land and existing residential homes. The noise level measurements collected show an overall 24-hour exterior noise level of 59.0 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 53.3 dBA L_{eq} with an average nighttime noise level of 52.1 dBA L_{eq}. The noise levels at this location consist primarily of traffic noise from North Weirick Road and Glen Road.
- Location L4 represents the noise levels southeast of the Project site on Glen Road near existing residential homes and vacant lot. The 24-hour CNEL indicates that the overall exterior noise level is 55.9 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 49.6 dBA L_{eq} with an average nighttime noise level of 49.2 dBA L_{eq}. Traffic on Glen Road represents the primary source of noise at this location.

Table 5-1 provides the (energy average) noise levels used to describe the daytime and nighttime ambient conditions. These daytime and nighttime energy average noise levels represent the average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 5.2 provides summary worksheets of the noise levels for each hour as well as the minimum, maximum, L_1, L_2, L_5, L_8, L_{25}, L_{50}, L_{90}, L_{95}, and L_{99} percentile noise levels observed during the daytime and nighttime periods.

The background ambient noise levels in the Project study area are dominated by the transportation-related noise associated with surface streets as well as Interstate 15. This includes the auto and heavy truck activities on study area roadway segments near the noise level measurement locations. The 24-hour existing noise level measurement results are shown on Table 5-1.

TABLE 5-1: 24-HOUR AMBIENT NOISE LEVEL MEASUREMENTS

Location[1]	Description	Energy Average Noise Level (dBA L_{eq})[2]		Median Noise Level (dBA L_{50})[2]		CNEL
		Daytime	Nighttime	Daytime	Nighttime	
L1	Located northwest of Project site on Eagle Glen Parkway and Bedford Canyon Road near existing residential homes.	67.3	63.9	60.2	53.7	71.4
L2	Located west of the Project site near existing vacant dirt lot.	57.3	55.8	54.4	52.1	62.7
L3	Located South of the project site on Glen Road and North Weirick Road near vacant land and existing residential homes.	53.3	52.1	52.0	50.8	59.0
L4	Located southeast of the Project site on Glen Road near existing residential homes and vacant lot.	49.6	49.2	47.7	47.7	55.9

[1] See Exhibit 5-A for the noise level measurement locations.
[2] The long-term 24-hour measurement worksheets are included in Appendix 5.2.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS



LEGEND:

Noise Measurement Locations

6 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the future traffic noise environment.

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The estimated roadway noise impacts from vehicular traffic were calculated using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (16) The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELs are substituted with the California Vehicle Noise (Calveno) Emission Levels. (17) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period. Research by Caltrans has shown that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model used in this analysis. (18)

6.2 OFF-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 6-1 presents the roadway parameters used to assess the Project's off-site transportation noise impacts. Table 6-1 identifies the 21 study area roadway segments, the distance from the centerline to adjacent land use based on the functional roadway classifications per the City of Corona General Plan Circulation Element, and the posted vehicle speeds. For the purpose of the off-site analysis, soft site conditions were used to analyze the traffic noise impacts for the Project study area. Soft site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation.

6.2.1 PROJECT TRAFFIC

The Existing, Interim Year 2021, and Horizon Year 2035 average daily traffic volumes used for this study are presented on Table 6-2 and are provided by *Bedford Marketplace Traffic Study*. (1) Table 6-3 presents the time of day vehicle splits and Table 6-4 presents the traffic flow distributions (vehicle mix) used for this analysis. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks and heavy trucks for input into the FHWA noise prediction model

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Adjacent Planned (Existing if Different) Land Use[1]	Distance from Centerline to Nearest Adjacent Land Use (Feet)[2]	Vehicle Speed (mph)
1	Masters Dr.	n/o California Av.	Residential	34'	40
2	Masters Dr.	s/o California Av.	Residential	34'	40
3	Masters Dr.	n/o Bennet Av.	Residential	34'	40
4	Masters Dr.	n/o Eagle Glen Pkwy.	Residential	34'	40
5	Bedford Cyn. Rd.	s/o El Cerrito Rd.	Residential	38'	40
6	Bedford Cyn. Rd.	n/o Georgetown Dr.	Residential	38'	40
7	Bedford Cyn. Rd.	n/o Eagle Glen Pkwy.	Residential	38'	40
8	Temescal Cyn. Rd.	n/o Cajalco Rd.	General Commercial	53'	45
9	Temescal Cyn. Rd.	s/o Cajalco Rd.	Agriculture	53'	45
10	California Av.	w/o Masters Dr.	General Commercial	34'	40
11	California Av.	e/o Masters Dr.	General Commercial	34'	40
12	El Cerrito Rd.	w/o Bedford Cyn. Rd.	General Industry	44'	40
13	El Cerrito Rd.	e/o Bedford Cyn. Rd.	Residential	44'	40
14	El Cerrito Rd.	e/o I-15 SB Ramps	Freeway	44'	40
15	El Cerrito Rd.	e/o I-15 NB Ramps	Residential	44'	40
16	Eagle Glen Pkwy.	e/o Masters Dr.	Residential	44'	40
17	Eagle Glen Pkwy.	e/o Bedford Cyn. Rd.	Open Space	65'	45
18	Cajalco Rd.	e/o I-15 SB Ramps	General Commercial	65'	45
19	Cajalco Rd.	e/o I-15 NB Ramps	General Commercial	65'	45
20	Cajalco Rd.	e/o Grand Oaks	General Commercial	65'	45
21	Cajalco Rd.	e/o Temescal Cyn. Rd.	General Commercial	65'	45

[1] Sources: City of Corona General Plan Atlas, 2012, and the County of Riverside Temescal Canyon Area Land Use Plan, 2003.
[2] Distance to adjacent land use is based upon the right-of-way distances for each functional roadway classification provided in the City of Corona General Plan Circulation Element.

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Average Daily Traffic Volumes[1]					
			Existing		Interim Year 2021		Horizon Year 2035	
			Without Project	With Project	Without Project	With Project	Without Project	With Project
1	Masters Dr.	n/o California Av.	4,452	4,682	5,049	5,069	8,000	8,250
2	Masters Dr.	s/o California Av.	9,364	9,364	10,071	10,153	8,800	9,668
3	Masters Dr.	n/o Bennet Av.	6,000	7,084	7,578	7,784	6,400	7,690
4	Masters Dr.	n/o Eagle Glen Pkwy.	5,466	6,648	7,098	7,346	6,100	7,532
5	Bedford Cyn. Rd.	s/o El Cerrito Rd.	7,800	9,490	10,133	10,401	14,500	16,458
6	Bedford Cyn. Rd.	n/o Georgetown Dr.	8,926	8,926	9,522	9,790	14,500	16,458
7	Bedford Cyn. Rd.	n/o Eagle Glen Pkwy.	8,088	9,876	10,542	10,852	14,200	16,298
8	Temescal Cyn. Rd.	n/o Cajalco Rd.	15,599	15,883	17,168	17,230	26,500	26,846
9	Temescal Cyn. Rd.	s/o Cajalco Rd.	21,684	22,242	24,029	24,091	21,000	28,448
10	California Av.	w/o Masters Dr.	5,244	5,480	5,912	5,954	8,300	8,578
11	California Av.	e/o Masters Dr.	7,000	7,320	7,897	7,917	10,800	11,140
12	El Cerrito Rd.	w/o Bedford Cyn. Rd.	24,043	25,127	27,108	27,294	29,000	30,270
13	El Cerrito Rd.	e/o Bedford Cyn. Rd.	25,534	26,140	28,244	28,326	35,100	35,788
14	El Cerrito Rd.	e/o I-15 SB Ramps	16,374	16,980	18,329	18,411	27,100	27,788
15	El Cerrito Rd.	e/o I-15 NB Ramps	9,519	10,125	10,909	10,991	17,200	17,888
16	Eagle Glen Pkwy.	e/o Masters Dr.	12,944	19,794	20,861	21,109	17,300	24,398
17	Eagle Glen Pkwy.	e/o Bedford Cyn. Rd.	18,480	33,686	35,209	36,713	20,600	37,310
18	Cajalco Rd.	e/o I-15 SB Ramps	20,220	29,005	30,671	31,546	24,900	34,560
19	Cajalco Rd.	e/o I-15 NB Ramps	30,314	32,680	35,178	35,426	30,700	33,314
20	Cajalco Rd.	e/o Grand Oaks	18,024	19,980	21,465	21,713	19,000	21,204
21	Cajalco Rd.	e/o Temescal Cyn. Rd.	20,076	21,190	22,844	22,968	30,000	31,238

[1] Source: Bedford Marketplace Traffic Study, Urban Crossroads, Inc.

TABLE 6-3: TIME OF DAY VEHICLE SPLITS

Vehicle Type	Time of Day Splits[1]			Total of Time of Day Splits
	Daytime	Evening	Nighttime	
Autos	77.5%	12.9%	9.6%	100.00%
Medium Trucks	84.8%	4.9%	10.3%	100.00%
Heavy Trucks	86.5%	2.7%	10.8%	100.00%

[1] Source: Arantine Hills Modified Project Noise Impact Analysis, Urban Crossroads, Inc. April 9, 2015.
"Daytime" = 7:00 a.m. to 7:00 p.m.; "Evening" = 7:00 p.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

TABLE 6-4: DISTRIBUTION OF TRAFFIC FLOW BY VEHICLE TYPE (VEHICLE MIX)

Roadway	Total % Traffic Flow[1]			Total
	Autos	Medium Trucks	Heavy Trucks	
All Segments	97.42%	1.84%	0.74%	100.00%
I-15 Freeway	94.39%	1.95%	3.66%	100.00%

[1] Source: Arantine Hills Modified Project Noise Impact Analysis, Urban Crossroads, Inc. April 9, 2015.
[2] Source: Caltrans Traffic Data Branch Annual Average Daily Truck Traffic (AADT) on the California State Highway System, 2013.

6.2.2 SOIL IMPORT/EXPORT HAUL TRUCK TRAFFIC

The Existing and Existing with Project (haul truck trips) average daily traffic volumes used for the soil import/export off-site traffic noise analysis are presented on Table 6-5. The without project average daily traffic volumes shown on Table 6-5 are based the published City of Corona average daily traffic volumes and the Kearny Sherborn Traffic Study prepared by Urban Crossroads, Inc. The with Project haul truck trips include both the 250 import and 250 export trips representing a total of 500 two-way (import and export) trips.

TABLE 6-5: SOIL IMPORT/EXPORT HAUL TRUCK AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Adjacent Existing Land Use	Average Daily Traffic Volumes[1]	
				Without Project[1]	With Project Haul Truck Trips
1	I-15 Freeway	n/o Cajalco Rd.	Residential/Commercial	164,000	164,500
2	Magnolia Ave.	e/o I-15 Freeway	Commercial/Industrial	40,000	40,500
3	Sherborn St.	s/o Magnolia Ave.	Commercial/Industrial	7,900	8,400

[1] Source: City of Corona Average Daily Traffic Volumes (5/30/2017) and Kearny Sherborn Traffic Study (7/25/2019).

To quantify the off-site traffic noise levels, the Project related haul trips were added to the heavy truck category in the FHWA noise prediction model. The addition of the Project related haul trips increases the percentage of heavy trucks in the vehicle mix. This approach recognizes that the FHWA noise prediction model is significantly influenced by the number of heavy trucks in the vehicle mix. Table 6-6 presents the without project traffic flow distribution by vehicle type.

TABLE 6-6: WITHOUT SOIL IMPORT/EXHPORT HAUL TRUCK TRIPS (VEHICLE MIX)

ID	Roadway	Segment	Total % Traffic Flow			Total
			Autos	Medium Trucks	Heavy Trucks	
1	I-15 Freeway	n/o Cajalco Rd.	94.39%	1.95%	3.66%	100%
2	Magnolia Ave.	e/o I-15 Freeway	97.42%	1.84%	0.74%	100%
3	Sherborn St.	s/o Magnolia Ave.	97.42%	1.84%	0.74%	100%

Table 6-7 presents the with project haul trips traffic flow distribution by vehicle type. As shown on Table 6-7, all the off-site roadway segments have a higher percentage of heavy trucks reflecting the additional haul heavy truck trips.

TABLE 6-7: WITH SOIL IMPORT/EXHPORT HAUL TRUCK TRIPS (VEHICLE MIX)

ID	Roadway	Segment	Total % Traffic Flow			Total
			Autos	Medium Trucks	Heavy Trucks	
1	I-15 Freeway	n/o Cajalco Rd.	94.10%	1.94%	3.95%	100%
2	Magnolia Ave.	e/o I-15 Freeway	96.25%	1.82%	1.93%	100%
3	Sherborn St.	s/o Magnolia Ave.	91.09%	1.72%	7.19%	100%

6.3 ON-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

The on-site roadway parameters including the average daily traffic (ADT) volumes used for this study are presented on Table 6-8. The traffic volumes shown on Table 6-5 reflect future long-range traffic conditions needed to assess the future on-site traffic noise environment and to identify the any noise mitigation measures to address the worst-case future conditions. For the purposes of this analysis, soft site conditions were used to analyze the on-site traffic noise impacts for the Project study area. Soft site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation.

TABLE 6-8: ON-SITE ROADWAY PARAMETERS

Roadway Segment	Lanes	Classification	Traffic Volume[1]	Speed (MPH)	Site Conditions
I-15 Freeway s/o Cajalco Rd.	6	Freeway	198,280	65	Soft

[1] Source: Arantine Hills Modified Project Traffic Study (March 2015).

The site plan was used to identify the relationship between the roadway centerline elevation, the pad elevation and the centerline distance to the noise barrier, and the building façade. The exterior noise level impacts at the outdoor pool area of the hotel use were placed five feet above the pad elevation. The second floor receivers were located 15 feet above the proposed finished floor elevation, all third floor receivers were located 25 feet above the proposed finished floor elevation and all fourth floor receiver were located 35 feet above the proposed finished floor elevation.

6.4 VIBRATION ASSESSMENT

This analysis focuses on the potential ground-borne vibration associated with vehicular traffic and construction activities. Ground-borne vibration levels from automobile traffic are generally overshadowed by vibration generated by heavy trucks that roll over the same uneven roadway surfaces. However, due to the rapid drop-off rate of ground-borne vibration and the short duration of the associated events, vehicular traffic-induced ground-borne vibration is rarely perceptible beyond the roadway right-of-way, and rarely results in vibration levels that cause damage to buildings in the vicinity.

While vehicular traffic is rarely perceptible, construction has the potential to result in varying degrees of temporary ground vibration, depending on the specific construction activities and equipment used. Ground vibration levels associated with various types of construction equipment are summarized on Table 6-9. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the human response (annoyance) using the following vibration assessment methods defined by the FTA. To describe the human response (annoyance) associated with vibration impacts the FTA provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

TABLE 6-9: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	PPV (in/sec) at 25 feet
Small bulldozer	0.003
Jackhammer	0.035
Loaded Trucks	0.076
Large bulldozer	0.089

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment.

7 OFF-SITE TRAFFIC NOISE IMPACTS

To assess the off-site transportation CNEL noise level impacts associated with development of the proposed Project, noise contours were developed based on *Bedford Marketplace Traffic Study*. (1) The off-site traffic noise analysis has been completed to determine the noise impacts associated with the development of the proposed Bedford Marketplace ("Project") an expansion of the previously approved commercial development area included within the Arantine Hills Specific Plan. The proposed Project represents the expansion of Bedford Marketplace from 80,000 sf to 135,000 sf of retail uses and a 135-room hotel. The incremental expansion of Bedford Marketplace constitutes the "Project" analyzed in this study. Based on the currently approved commercial trip generation in the Arantine Hills Traffic Assessment (November 2018), the Project is anticipated to generate an additional 2,061 external trips per day.

Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway. Noise contours were developed for the following traffic scenarios:

PROJECT TRAFFIC

- Existing Without / With Project: This scenario refers to the existing present-day noise conditions, without and with the proposed Project. This condition is provided solely for analytical purposes and will not occur, since the Project will not be fully developed and occupied under Existing conditions.
- Interim Year 2021 Without / With Project: This scenario refers to the combination of existing traffic, ambient growth (total of 8%), approved Arantine Hills Specific Plan traffic, and increases in traffic volumes associated with the added Project land uses. The approved Arantine Hills Project traffic is also included as background traffic for Interim Year 2021 conditions.
- Horizon Year 2035 Without / With Project: This scenario refers the horizon year 2035 forecasts are derived from the approved Arantine Hills Specific Plan Traffic Assessment (November 2018).

SOIL IMPORT/EXPORT HAUL TRUCK CONSTRUCTION TRAFFIC

- Existing Without / With Project: This scenario refers to the existing present-day noise conditions with the proposed 500 daily soil import/export truck haul trips.

7.1 PROJECT TRAFFIC NOISE CONTOURS

Noise contours were used to assess the Project's incremental traffic-related noise impacts at land uses adjacent to roadways conveying Project traffic. The noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway for the 70, 65, and 60 dBA noise levels. The noise contours do not consider the effect of any existing noise barriers or topography that may attenuate ambient noise levels. In addition, because the noise contours reflect modeling of vehicular noise on area roadways, they appropriately do not reflect noise contributions from the surrounding stationary noise sources within the Project study area. Tables 7-1 and 7-6 present a summary of the exterior traffic noise levels, without barrier attenuation, for the study area roadway segments analyzed from the without Project to the with

Project conditions for Existing, Interim Year 2021, and Horizon Year 2035 conditions. Appendix 7.1 includes a summary of the traffic noise level contours for each of the traffic scenarios.

TABLE 7-1: EXISTING WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Masters Dr.	n/o California Av.	Residential	64.3	RW	RW	66
2	Masters Dr.	s/o California Av.	Residential	67.5	RW	50	108
3	Masters Dr.	n/o Bennet Av.	Residential	65.6	RW	37	80
4	Masters Dr.	n/o Eagle Glen Pkwy.	Residential	65.2	RW	35	75
5	Bedford Cyn. Rd.	s/o El Cerrito Rd.	Residential	66.2	RW	46	98
6	Bedford Cyn. Rd.	n/o Georgetown Dr.	Residential	66.8	RW	50	108
7	Bedford Cyn. Rd.	n/o Eagle Glen Pkwy.	Residential	66.4	RW	47	101
8	Temescal Cyn. Rd.	n/o Cajalco Rd.	General Commercial	68.8	RW	96	206
9	Temescal Cyn. Rd.	s/o Cajalco Rd.	Agriculture	70.3	55	119	257
10	California Av.	w/o Masters Dr.	General Commercial	65.0	RW	34	73
11	California Av.	e/o Masters Dr.	General Commercial	66.2	RW	41	89
12	El Cerrito Rd.	w/o Bedford Cyn. Rd.	General Industry	70.4	47	101	217
13	El Cerrito Rd.	e/o Bedford Cyn. Rd.	Residential	70.7	49	105	226
14	El Cerrito Rd.	e/o I-15 SB Ramps	Freeway	68.7	RW	78	168
15	El Cerrito Rd.	e/o I-15 NB Ramps	Residential	66.4	RW	54	117
16	Eagle Glen Pkwy.	e/o Masters Dr.	Residential	67.7	RW	67	144
17	Eagle Glen Pkwy.	e/o Bedford Cyn. Rd.	Open Space	68.8	RW	116	250
18	Cajalco Rd.	e/o I-15 SB Ramps	General Commercial	69.2	RW	123	265
19	Cajalco Rd.	e/o I-15 NB Ramps	General Commercial	70.9	75	161	347
20	Cajalco Rd.	e/o Grand Oaks	General Commercial	68.7	RW	114	246
21	Cajalco Rd.	e/o Temescal Cyn. Rd.	General Commercial	69.1	RW	122	264

[1] Sources: City of Corona General Plan Atlas, January 2012, and the County of Riverside Temescal Canyon Area Land Use Plan

[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.

"RW" = Location of the respective noise contour falls within the right-of-way of the road; "n/a" = Roadway segment does not represent a paved and/or fully constructed roadway under the given scenario.

TABLE 7-2: EXISTING WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Masters Dr.	n/o California Av.	Residential	64.5	RW	RW	68
2	Masters Dr.	s/o California Av.	Residential	67.5	RW	50	108
3	Masters Dr.	n/o Bennet Av.	Residential	66.3	RW	42	89
4	Masters Dr.	n/o Eagle Glen Pkwy.	Residential	66.0	RW	40	86
5	Bedford Cyn. Rd.	s/o El Cerrito Rd.	Residential	67.1	RW	52	112
6	Bedford Cyn. Rd.	n/o Georgetown Dr.	Residential	66.8	RW	50	108
7	Bedford Cyn. Rd.	n/o Eagle Glen Pkwy.	Residential	67.2	RW	53	115
8	Temescal Cyn. Rd.	n/o Cajalco Rd.	General Commercial	68.9	RW	97	209
9	Temescal Cyn. Rd.	s/o Cajalco Rd.	Agriculture	70.4	56	121	261
10	California Av.	w/o Masters Dr.	General Commercial	65.2	RW	35	75
11	California Av.	e/o Masters Dr.	General Commercial	66.4	RW	42	91
12	El Cerrito Rd.	w/o Bedford Cyn. Rd.	General Industry	70.6	48	104	224
13	El Cerrito Rd.	e/o Bedford Cyn. Rd.	Residential	70.8	49	107	230
14	El Cerrito Rd.	e/o I-15 SB Ramps	Freeway	68.9	RW	80	172
15	El Cerrito Rd.	e/o I-15 NB Ramps	Residential	66.6	RW	57	122
16	Eagle Glen Pkwy.	e/o Masters Dr.	Residential	69.6	RW	89	191
17	Eagle Glen Pkwy.	e/o Bedford Cyn. Rd.	Open Space	71.4	80	173	373
18	Cajalco Rd.	e/o I-15 SB Ramps	General Commercial	70.7	73	157	337
19	Cajalco Rd.	e/o I-15 NB Ramps	General Commercial	71.2	79	169	365
20	Cajalco Rd.	e/o Grand Oaks	General Commercial	69.1	RW	122	263
21	Cajalco Rd.	e/o Temescal Cyn. Rd.	General Commercial	69.4	RW	127	274

[1] Sources: City of Corona General Plan Atlas, January 2012, and the County of Riverside Temescal Canyon Area Land Use Plan.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road; "n/a" = Roadway segment does not represent a paved and/or fully constructed roadway under the given scenario.

TABLE 7-3: INTERIM YEAR 2021 WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Masters Dr.	n/o California Av.	Residential	64.8	RW	RW	71
2	Masters Dr.	s/o California Av.	Residential	67.8	RW	52	113
3	Masters Dr.	n/o Bennet Av.	Residential	66.6	RW	43	94
4	Masters Dr.	n/o Eagle Glen Pkwy.	Residential	66.3	RW	42	90
5	Bedford Cyn. Rd.	s/o El Cerrito Rd.	Residential	67.3	RW	54	117
6	Bedford Cyn. Rd.	n/o Georgetown Dr.	Residential	67.1	RW	52	112
7	Bedford Cyn. Rd.	n/o Eagle Glen Pkwy.	Residential	67.5	RW	56	120
8	Temescal Cyn. Rd.	n/o Cajalco Rd.	General Commercial	69.3	RW	102	220
9	Temescal Cyn. Rd.	s/o Cajalco Rd.	Agriculture	70.7	59	128	275
10	California Av.	w/o Masters Dr.	General Commercial	65.5	RW	37	79
11	California Av.	e/o Masters Dr.	General Commercial	66.8	RW	45	96
12	El Cerrito Rd.	w/o Bedford Cyn. Rd.	General Industry	70.9	51	109	235
13	El Cerrito Rd.	e/o Bedford Cyn. Rd.	Residential	71.1	52	112	242
14	El Cerrito Rd.	e/o I-15 SB Ramps	Freeway	69.2	RW	84	181
15	El Cerrito Rd.	e/o I-15 NB Ramps	Residential	67.0	RW	60	128
16	Eagle Glen Pkwy.	e/o Masters Dr.	Residential	69.8	RW	92	198
17	Eagle Glen Pkwy.	e/o Bedford Cyn. Rd.	Open Space	71.6	83	178	384
18	Cajalco Rd.	e/o I-15 SB Ramps	General Commercial	71.0	75	162	350
19	Cajalco Rd.	e/o I-15 NB Ramps	General Commercial	71.6	83	178	383
20	Cajalco Rd.	e/o Grand Oaks	General Commercial	69.4	RW	128	276
21	Cajalco Rd.	e/o Temescal Cyn. Rd.	General Commercial	69.7	RW	133	288

[1] Sources: City of Corona General Plan Atlas, January 2012, and the County of Riverside Temescal Canyon Area Land Use Plan.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road; "n/a" = Roadway segment does not represent a paved and/or fully constructed roadway under the given scenario.

TABLE 7-4: INTERIM YEAR 2021 WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Masters Dr.	n/o California Av.	Residential	64.8	RW	RW	72
2	Masters Dr.	s/o California Av.	Residential	67.9	RW	53	114
3	Masters Dr.	n/o Bennet Av.	Residential	66.7	RW	44	95
4	Masters Dr.	n/o Eagle Glen Pkwy.	Residential	66.5	RW	43	92
5	Bedford Cyn. Rd.	s/o El Cerrito Rd.	Residential	67.5	RW	55	119
6	Bedford Cyn. Rd.	n/o Georgetown Dr.	Residential	67.2	RW	53	115
7	Bedford Cyn. Rd.	n/o Eagle Glen Pkwy.	Residential	67.6	RW	57	123
8	Temescal Cyn. Rd.	n/o Cajalco Rd.	General Commercial	69.3	RW	102	220
9	Temescal Cyn. Rd.	s/o Cajalco Rd.	Agriculture	70.7	59	128	275
10	California Av.	w/o Masters Dr.	General Commercial	65.5	RW	37	80
11	California Av.	e/o Masters Dr.	General Commercial	66.8	RW	45	96
12	El Cerrito Rd.	w/o Bedford Cyn. Rd.	General Industry	71.0	51	110	236
13	El Cerrito Rd.	e/o Bedford Cyn. Rd.	Residential	71.1	52	112	242
14	El Cerrito Rd.	e/o I-15 SB Ramps	Freeway	69.2	RW	84	182
15	El Cerrito Rd.	e/o I-15 NB Ramps	Residential	67.0	RW	60	129
16	Eagle Glen Pkwy.	e/o Masters Dr.	Residential	69.8	RW	92	199
17	Eagle Glen Pkwy.	e/o Bedford Cyn. Rd.	Open Space	71.7	85	183	395
18	Cajalco Rd.	e/o I-15 SB Ramps	General Commercial	71.1	77	166	357
19	Cajalco Rd.	e/o I-15 NB Ramps	General Commercial	71.6	83	179	385
20	Cajalco Rd.	e/o Grand Oaks	General Commercial	69.5	RW	129	278
21	Cajalco Rd.	e/o Temescal Cyn. Rd.	General Commercial	69.7	RW	134	289

[1] Sources: City of Corona General Plan Atlas, January 2012, and the County of Riverside Temescal Canyon Area Land Use Plan.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road; "n/a" = Roadway segment does not represent a paved and/or fully constructed roadway under the given scenario.

TABLE 7-5: HORIZON YEAR 2035 WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Masters Dr.	n/o California Av.	Residential	66.8	RW	45	97
2	Masters Dr.	s/o California Av.	Residential	67.2	RW	48	103
3	Masters Dr.	n/o Bennet Av.	Residential	65.9	RW	39	84
4	Masters Dr.	n/o Eagle Glen Pkwy.	Residential	65.6	RW	38	81
5	Bedford Cyn. Rd.	s/o El Cerrito Rd.	Residential	68.9	RW	69	149
6	Bedford Cyn. Rd.	n/o Georgetown Dr.	Residential	68.9	RW	69	149
7	Bedford Cyn. Rd.	n/o Eagle Glen Pkwy.	Residential	68.8	RW	68	147
8	Temescal Cyn. Rd.	n/o Cajalco Rd.	General Commercial	71.2	63	136	294
9	Temescal Cyn. Rd.	s/o Cajalco Rd.	Agriculture	70.1	54	117	251
10	California Av.	w/o Masters Dr.	General Commercial	67.0	RW	46	99
11	California Av.	e/o Masters Dr.	General Commercial	68.1	RW	55	118
12	El Cerrito Rd.	w/o Bedford Cyn. Rd.	General Industry	71.2	53	114	246
13	El Cerrito Rd.	e/o Bedford Cyn. Rd.	Residential	72.0	60	130	279
14	El Cerrito Rd.	e/o I-15 SB Ramps	Freeway	70.9	51	109	235
15	El Cerrito Rd.	e/o I-15 NB Ramps	Residential	68.9	RW	81	174
16	Eagle Glen Pkwy.	e/o Masters Dr.	Residential	69.0	RW	81	174
17	Eagle Glen Pkwy.	e/o Bedford Cyn. Rd.	Open Space	69.2	RW	125	268
18	Cajalco Rd.	e/o I-15 SB Ramps	General Commercial	70.1	66	141	305
19	Cajalco Rd.	e/o I-15 NB Ramps	General Commercial	71.0	75	163	350
20	Cajalco Rd.	e/o Grand Oaks	General Commercial	68.9	RW	118	254
21	Cajalco Rd.	e/o Temescal Cyn. Rd.	General Commercial	70.9	74	160	345

[1] Sources: City of Corona General Plan Atlas, January 2012, and the County of Riverside Temescal Canyon Area Land Use Plan.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road; "n/a" = Roadway segment does not represent a paved and/or fully constructed roadway under the given scenario.

TABLE 7-6: HORIZON YEAR 2035 WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Masters Dr.	n/o California Av.	Residential	67.0	RW	46	99
2	Masters Dr.	s/o California Av.	Residential	67.7	RW	51	110
3	Masters Dr.	n/o Bennet Av.	Residential	66.7	RW	44	94
4	Masters Dr.	n/o Eagle Glen Pkwy.	Residential	66.6	RW	43	93
5	Bedford Cyn. Rd.	s/o El Cerrito Rd.	Residential	69.4	RW	75	162
6	Bedford Cyn. Rd.	n/o Georgetown Dr.	Residential	69.4	RW	75	162
7	Bedford Cyn. Rd.	n/o Eagle Glen Pkwy.	Residential	69.4	RW	75	161
8	Temescal Cyn. Rd.	n/o Cajalco Rd.	General Commercial	71.2	64	137	296
9	Temescal Cyn. Rd.	s/o Cajalco Rd.	Agriculture	71.5	66	143	308
10	California Av.	w/o Masters Dr.	General Commercial	67.1	RW	47	102
11	California Av.	e/o Masters Dr.	General Commercial	68.3	RW	56	121
12	El Cerrito Rd.	w/o Bedford Cyn. Rd.	General Industry	71.4	55	118	253
13	El Cerrito Rd.	e/o Bedford Cyn. Rd.	Residential	72.1	61	131	283
14	El Cerrito Rd.	e/o I-15 SB Ramps	Freeway	71.0	52	111	239
15	El Cerrito Rd.	e/o I-15 NB Ramps	Residential	69.1	RW	83	178
16	Eagle Glen Pkwy.	e/o Masters Dr.	Residential	70.5	47	102	219
17	Eagle Glen Pkwy.	e/o Bedford Cyn. Rd.	Open Space	71.8	86	185	399
18	Cajalco Rd.	e/o I-15 SB Ramps	General Commercial	71.5	82	176	379
19	Cajalco Rd.	e/o I-15 NB Ramps	General Commercial	71.3	80	172	370
20	Cajalco Rd.	e/o Grand Oaks	General Commercial	69.4	RW	127	274
21	Cajalco Rd.	e/o Temescal Cyn. Rd.	General Commercial	71.0	76	164	354

[1] Sources: City of Corona General Plan Atlas, January 2012, and the County of Riverside Temescal Canyon Area Land Use Plan.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road; "n/a" = Roadway segment does not represent a paved and/or fully constructed roadway under the given scenario.

7.2 EXISTING CONDITIONS PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

An analysis of existing traffic noise levels plus traffic noise generated by the proposed Project has been included in this report for informational purposes and to fully analyze all the traffic conditions identified in the *Bedford Marketplace Traffic Study* prepared by Urban Crossroads, Inc. This condition is provided solely for analytical purposes and will not occur, since the Project will not be fully developed and occupied under Existing conditions.

Table 7-1 presents the Existing without Project conditions CNEL noise levels. The without Project exterior noise levels are expected to range from 64.3 to 70.9 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows the Existing with Project conditions will range from 64.5 to 71.4 dBA CNEL. As shown on Table 7-7 the Project will generate a noise level increase of up to 2.6 dBA CNEL on the study area roadway segments.

7.3 INTERIM YEAR 2021 PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

Table 7-3 presents the Interim Year 2021 without Project conditions CNEL noise levels which are expected to range from 64.8 to 71.6 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography.

Table 7-4 shows the Interim Year 2021 with Project conditions will range from 64.8 to 71.7 dBA CNEL. As shown on Table 7-8 the Project will generate a noise level increase of up to 0.2 dBA CNEL on the study area roadway segments. Based on the significance criteria in Section 4, the Project-related noise level increases are considered *less than significant* under Interim Year 2021 with Project conditions at the land uses adjacent to roadways conveying Project traffic.

7.4 HORIZON YEAR 2035 PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

Table 7-5 presents the Horizon Year 2035 without Project conditions CNEL noise levels are expected to range from 65.6 to 72.0 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography.

Table 7-6 shows the Horizon Year 2035 with Project conditions will range from 66.6 to 72.1 dBA CNEL. As shown on Table 7-9 the Project will generate a noise level increase of up to 2.6 dBA CNEL on the study area roadway segments. Based on the significance criteria in Section 4, the Project-related noise level increases are considered *less than significant* under Horizon Year 2035 with Project conditions at the land uses adjacent to roadways conveying Project traffic.

TABLE 7-7: EXISTING OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	Adjacent Land Use	CNEL at Adjacent Land Use (dBA)[1]			Noise-Sensitive Land Use?	Off-Site Traffic Noise Threshold[2]	Threshold Exceeded?
				No Project	With Project	Project Addition			
1	Masters Dr.	n/o California Av.	Residential	64.3	64.5	0.2	Yes	3.0	No
2	Masters Dr.	s/o California Av.	Residential	67.5	67.5	0.0	Yes	1.5	No
3	Masters Dr.	n/o Bennet Av.	Residential	65.6	66.3	0.7	Yes	1.5	No
4	Masters Dr.	n/o Eagle Glen Pkwy.	Residential	65.2	66.0	0.8	Yes	1.5	No
5	Bedford Cyn. Rd.	s/o El Cerrito Rd.	Residential	66.2	67.1	0.9	Yes	1.5	No
6	Bedford Cyn. Rd.	n/o Georgetown Dr.	Residential	66.8	66.8	0.0	Yes	1.5	No
7	Bedford Cyn. Rd.	n/o Eagle Glen Pkwy.	Residential	66.4	67.2	0.8	Yes	1.5	No
8	Temescal Cyn. Rd.	n/o Cajalco Rd.	General Commercial	68.8	68.9	0.1	No	n/a	No
9	Temescal Cyn. Rd.	s/o Cajalco Rd.	Agriculture	70.3	70.4	0.1	No	n/a	No
10	California Av.	w/o Masters Dr.	General Commercial	65.0	65.2	0.2	No	n/a	No
11	California Av.	e/o Masters Dr.	General Commercial	66.2	66.4	0.2	No	n/a	No
12	El Cerrito Rd.	w/o Bedford Cyn. Rd.	General Industry	70.4	70.6	0.2	No	n/a	No
13	El Cerrito Rd.	e/o Bedford Cyn. Rd.	Residential	70.7	70.8	0.1	Yes	1.5	No
14	El Cerrito Rd.	e/o I-15 SB Ramps	Freeway	68.7	68.9	0.2	No	n/a	No
15	El Cerrito Rd.	e/o I-15 NB Ramps	Residential	66.4	66.6	0.2	Yes	1.5	No
16	Eagle Glen Pkwy.	e/o Masters Dr.	Residential	67.7	69.6	1.9	Yes	1.5	Yes
17	Eagle Glen Pkwy.	e/o Bedford Cyn. Rd.	Open Space	68.8	71.4	2.6	No	n/a	No
18	Cajalco Rd.	e/o I-15 SB Ramps	General Commercial	69.2	70.7	1.5	No	n/a	No
19	Cajalco Rd.	e/o I-15 NB Ramps	General Commercial	70.9	71.2	0.3	No	n/a	No
20	Cajalco Rd.	e/o Grand Oaks	General Commercial	68.7	69.1	0.4	No	n/a	No
21	Cajalco Rd.	e/o Temescal Cyn. Rd.	General Commercial	69.1	69.4	0.3	No	n/a	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] Significance Criteria (Section 4). "n/a" not applicable, adjacent land use is not a noise sensitive.

TABLE 7-8: INTERIM YEAR 2021 OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	Adjacent Land Use	CNEL at Adjacent Land Use (dBA)[1]			Noise-Sensitive Land Use?	Off-Site Traffic Noise Threshold[2]	Threshold Exceeded?
				No Project	With Project	Project Addition			
1	Masters Dr.	n/o California Av.	Residential	64.8	64.8	0.0	Yes	3.0	No
2	Masters Dr.	s/o California Av.	Residential	67.8	67.9	0.1	Yes	1.5	No
3	Masters Dr.	n/o Bennet Av.	Residential	66.6	66.7	0.1	Yes	1.5	No
4	Masters Dr.	n/o Eagle Glen Pkwy.	Residential	66.3	66.5	0.2	Yes	1.5	No
5	Bedford Cyn. Rd.	s/o El Cerrito Rd.	Residential	67.3	67.5	0.2	Yes	1.5	No
6	Bedford Cyn. Rd.	n/o Georgetown Dr.	Residential	67.1	67.2	0.1	Yes	1.5	No
7	Bedford Cyn. Rd.	n/o Eagle Glen Pkwy.	Residential	67.5	67.6	0.1	Yes	1.5	No
8	Temescal Cyn. Rd.	n/o Cajalco Rd.	General Commercial	69.3	69.3	0.0	No	n/a	No
9	Temescal Cyn. Rd.	s/o Cajalco Rd.	Agriculture	70.7	70.7	0.0	No	n/a	No
10	California Av.	w/o Masters Dr.	General Commercial	65.5	65.5	0.0	No	n/a	No
11	California Av.	e/o Masters Dr.	General Commercial	66.8	66.8	0.0	No	n/a	No
12	El Cerrito Rd.	w/o Bedford Cyn. Rd.	General Industry	70.9	71.0	0.1	No	n/a	No
13	El Cerrito Rd.	e/o Bedford Cyn. Rd.	Residential	71.1	71.1	0.0	Yes	1.5	No
14	El Cerrito Rd.	e/o I-15 SB Ramps	Freeway	69.2	69.2	0.0	No	n/a	No
15	El Cerrito Rd.	e/o I-15 NB Ramps	Residential	67.0	67.0	0.0	Yes	1.5	No
16	Eagle Glen Pkwy.	e/o Masters Dr.	Residential	69.8	69.8	0.0	Yes	1.5	No
17	Eagle Glen Pkwy.	e/o Bedford Cyn. Rd.	Open Space	71.6	71.7	0.1	No	n/a	No
18	Cajalco Rd.	e/o I-15 SB Ramps	General Commercial	71.0	71.1	0.1	No	n/a	No
19	Cajalco Rd.	e/o I-15 NB Ramps	General Commercial	71.6	71.6	0.0	No	n/a	No
20	Cajalco Rd.	e/o Grand Oaks	General Commercial	69.4	69.5	0.1	No	n/a	No
21	Cajalco Rd.	e/o Temescal Cyn. Rd.	General Commercial	69.7	69.7	0.0	No	n/a	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.

[2] Significance Criteria (Section 4). "n/a" not applicable, adjacent land use is not a noise sensitive.

TABLE 7-9: HORIZON YEAR 2035 OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	Adjacent Land Use	CNEL at Adjacent Land Use (dBA)[1]			Noise-Sensitive Land Use?	Off-Site Traffic Noise Threshold[2]	Threshold Exceeded?
				No Project	With Project	Project Addition			
1	Masters Dr.	n/o California Av.	Residential	66.8	67.0	0.2	Yes	1.5	No
2	Masters Dr.	s/o California Av.	Residential	67.2	67.7	0.5	Yes	1.5	No
3	Masters Dr.	n/o Bennet Av.	Residential	65.9	66.7	0.8	Yes	1.5	No
4	Masters Dr.	n/o Eagle Glen Pkwy.	Residential	65.6	66.6	1.0	Yes	1.5	No
5	Bedford Cyn. Rd.	s/o El Cerrito Rd.	Residential	68.9	69.4	0.5	Yes	1.5	No
6	Bedford Cyn. Rd.	n/o Georgetown Dr.	Residential	68.9	69.4	0.5	Yes	1.5	No
7	Bedford Cyn. Rd.	n/o Eagle Glen Pkwy.	Residential	68.8	69.4	0.6	Yes	1.5	No
8	Temescal Cyn. Rd.	n/o Cajalco Rd.	General Commercial	71.2	71.2	0.0	No	n/a	No
9	Temescal Cyn. Rd.	s/o Cajalco Rd.	Agriculture	70.1	71.5	1.4	No	n/a	No
10	California Av.	w/o Masters Dr.	General Commercial	67.0	67.1	0.1	No	n/a	No
11	California Av.	e/o Masters Dr.	General Commercial	68.1	68.3	0.2	No	n/a	No
12	El Cerrito Rd.	w/o Bedford Cyn. Rd.	General Industry	71.2	71.4	0.2	No	n/a	No
13	El Cerrito Rd.	e/o Bedford Cyn. Rd.	Residential	72.0	72.1	0.1	Yes	1.5	No
14	El Cerrito Rd.	e/o I-15 SB Ramps	Freeway	70.9	71.0	0.1	No	n/a	No
15	El Cerrito Rd.	e/o I-15 NB Ramps	Residential	68.9	69.1	0.2	Yes	1.5	No
16	Eagle Glen Pkwy.	e/o Masters Dr.	Residential	69.0	70.5	1.5	Yes	1.5	No
17	Eagle Glen Pkwy.	e/o Bedford Cyn. Rd.	Open Space	69.2	71.8	2.6	No	n/a	No
18	Cajalco Rd.	e/o I-15 SB Ramps	General Commercial	70.1	71.5	1.4	No	n/a	No
19	Cajalco Rd.	e/o I-15 NB Ramps	General Commercial	71.0	71.3	0.3	No	n/a	No
20	Cajalco Rd.	e/o Grand Oaks	General Commercial	68.9	69.4	0.5	No	n/a	No
21	Cajalco Rd.	e/o Temescal Cyn. Rd.	General Commercial	70.9	71.0	0.1	No	n/a	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.

[2] Significance Criteria (Section 4). "n/a" not applicable, adjacent land use is not noise sensitive.

7.5 SOIL IMPORT/EXPORT HAUL TRUCK OFF-SITE TRAFFIC ANALYSIS

To bring the Modified Bedford Marketplace Project Site up to an elevation similar (within five feet) of the existing 10-acre commercial pad, import of approximately 440,000 cubic yards of dirt is required. The import operation is expected to include 250 full loads per night, assuming 15 cubic yards per load, for a total of 3,750 cubic yards per night. To import 440,000 cubic yards, approximately 118 nights of import would be required.

The Project proposes to import dirt during the hours (8:00 p.m. to 4:00 a.m.) and complete grading operations both during daytime and nighttime hours. A source of import has been identified from the FST Sand and Gravel Mine, located east of the I-15 Freeway as shown on Exhibit 7-A. The dirt would be hauled from the borrow site on Minnesota Road to Sherborn Street to Magnolia Avenue to the I-15 Freeway southbound on ramp at Magnolia Avenue, exit at Cajalco Road and enter the Modified Project Site by crossing Cajalco Road from the southbound off-ramp with traffic control. Trucks would return onto Cajalco Road, enter I-15 Freeway northbound to Magnolia Avenue to Sherborn Street and travel south to the borrow site.

The proposed soil import/export haul route was specially developed to avoid potentially significant impacts to potential noise sensitive residential land uses. A review of the haul route shows that the only adjacent noise sensitive residential land uses are located adjacent to the I-15 Freeway. Many of these noise sensitive residential land uses benefit from existing sound walls that have been developed to control traffic noise from the I-15 Freeway.

The following analysis describes the potential off-site Project haul trips traffic noise impacts if all truck haul trips occur during the evening and nighttime hours from 8:00 pm to 4:00 am. This analysis describes the Project's incremental traffic-related noise impacts at land uses adjacent to roadways conveying Project traffic. The predicted future exterior noise levels (included in Appendix 7.2) represent the distance from the center of the roadway to the nearest noise receiver locations. Table 7-10 presents the Existing without Project off-site traffic CNEL noise levels which are expected to range from 58.4 to 71.1 dBA CNEL. Table 7-10 shows that the With Project Haul Truck Trips off-site traffic noise conditions will range from 63.8 to 72.8 dBA CNEL.

As shown on Table 7-10, the Project haul truck trips will generate a noise level increase ranging from 0.2 dBA CNEL on the I-15 Freeway to 5.4 dBA CNEL on Sherborn Street. Based on the significance criteria outlined above, the Project soil import/export truck trip-related noise level increases are considered *less than significant* impacts at the land uses adjacent to roadways conveying Project haul truck traffic.

EXHIBIT 7-A: SOIL IMPORT/EXPORT HAUL TRUCK ROUTE



TABLE 7-10: EXISTING OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Location	Adjacent Land Use	CNEL at Adjacent Land Use (dBA)[1]			Noise-Sensitive Land Use?	Off-Site Traffic Noise Threshold[2]	Threshold Exceeded?
				No Haul	With Haul	Haul Addition			
1	I-15 Freeway	20225 Bedford Canyon Rd.	Residential	69.8	70.0	0.2	Yes	1.5	No
2	Magnolia Ave.	1295 Magnolia Ave.	Commercial	71.1	72.8	1.7	No	n/a	No
3	Sherborn St.	1168 Sherborn St.	Commercial/Industrial	58.4	63.8	5.4	No	n/a	No

[1] The CNEL is calculated at the nearest representative receiver of the nearest adjacent land use.

[2] Significance Criteria (Section 4). "n/a" not applicable, adjacent land use is not a noise sensitive.

8 ON-SITE NOISE IMPACTS

An on-site exterior noise impact analysis has been completed to determine the noise exposure levels that would result from adjacent traffic noise sources in the Project study area, and to identify potential noise mitigation measures that would achieve acceptable Project exterior and interior noise levels. The primary source of traffic noise affecting the Project site is anticipated to be from the I-15 Freeway. The Project will also experience some background traffic noise impacts from its internal streets and parking lots, however, due to the low traffic volume and low speeds of vehicles travelling on these roadways, traffic noise will not make a significant contribution to the noise environment beyond of the right-of-way of each road.

8.1 EXTERIOR NOISE ANALYSIS

Using the FHWA traffic noise prediction model and the parameters outlined in Section 6, the expected future exterior noise levels for the noise sensitive on-site building were calculated. For noise-sensitive uses, Table 5 *Interior and Exterior Noise Standards* of the Public Health and Safety Element indicates that the exterior noise levels shall not exceed 65 dBA CNEL for the planned hotel use.

8.1.1 OUTDOOR COMMON AREAS

The 65 dBA CNEL exterior noise standards typically apply to outdoor areas where people congregate. In relation to the proposed Bedford Marketplace, the 65 dBA CNEL exterior noise standards apply only to the hotel outdoor pool area. The City of Corona does not identify any exterior noise standards for any of the commercial land use activities such as the outdoor patio areas for proposed restaurant uses.

Table 8-1 presents a summary of future exterior noise level impacts at the outdoor pool area of the hotel use. To minimize the potential exterior noise level impacts, the outdoor pool area is located behind the 4-story hotel building that effectively blocks the noise sensitive area from the I-15 Freeway. The on-site traffic noise level impacts indicate that outdoor pool area will experience unmitigated exterior noise levels of 52.3 dBA CNEL. Since the unmitigated on-site traffic noise levels satisfy the City of Corona 65 dBA CNEL exterior noise level standards, the on-site exterior traffic noise levels are considered *less than significant* impacts.

TABLE 8-1: UNMITIGATED EXTERIOR TRAFFIC NOISE LEVELS

Outdoor Common Area	Floor	Roadway	Exterior Noise Level (dBA CNEL)[1]	Threshold (dBA CNEL)[2]	Threshold Exceeded?
Hotel Pool	1	I-15 Freeway	52.3	65	No

[1] Unmitigated exterior noise level within the hotel outdoor pool area.
[2] Source: Public Health & Safety Element Interior and Exterior Noise Standards (Exhibit 3-B).

8.1.2 BUILDING FACADE

Table 8-2 presents a summary of future exterior noise levels at the 1st, 2nd, 3rd and 4th-floor hotel building facades. Exterior noise levels at the building façade are presented to estimate the interior noise levels. The on-site transportation analysis indicates that the unmitigated exterior noise levels will range from 66.3 to 71.5 dBA CNEL at the hotel building façades. The on-site traffic noise analysis calculations at are provided in Appendix 8.1.

TABLE 8-2: EXTERIOR TRAFFIC NOISE LEVELS AT THE BUILDING FACADE

Receiver Location	Roadway	Exterior Noise Level at Façade (dBA CNEL)			
		1st Floor	2nd Floor	3rd Floor	4th Floor
Hotel	I-15 Fwy.	66.3	71.5	71.4	71.4

8.2 INTERIOR NOISE ANALYSIS

To ensure that the interior noise levels comply with the City of Corona interior noise level standards, future noise levels were calculated at the estimated building façade locations. For noise-sensitive uses, Table 5 *Interior and Exterior Noise Standards* of the Public Health and Safety Element indicates that Interior noise levels shall not exceed 45 dBA CNEL for hotel uses and 55 dBA CNEL for all other commercial uses consistent with the General Plan Public Health and Safety Element interior and exterior noise standards (See Exhibit 3-B).

8.2.1 NOISE REDUCTION METHODOLOGY

The interior noise level is the difference between the predicted exterior noise level at the building facade and the noise reduction of the structure. Typical building construction will provide a Noise Reduction (NR) of approximately 25 dBA noise reduction with "windows closed." (19; 20) However, sound leaks, cracks and openings within the window assembly can greatly diminish its effectiveness in reducing noise. Several methods are used to improve interior noise reduction, including: (1) weather-stripped solid core exterior doors; (2) upgraded dual glazed windows; (3) mechanical ventilation/air conditioning; and (4) exterior wall/roof assembles free of cut outs or openings.

8.2.2 INTERIOR NOISE LEVEL ASSESSMENT

Table 8-2 shows that the Project buildings will require a windows-closed condition and a means of mechanical ventilation (e.g. air conditioning). Table 8-2 shows that the future exterior noise levels at the hotel building façades are expected to range from 66.3 to 71.5 dBA CNEL. The interior noise level analysis shows that the City of Corona 55 dBA CNEL interior noise standards can be satisfied using typical building construction for all commercial buildings. The interior noise analysis for the noise sensitive hotel use shows that the City of Corona 45 dBA CNEL interior noise standards can be satisfied using typical building construction with a minimum STC ratings of 30

for windows facing the I-15 Freeway. With the STC ratings of 30 for windows facing the I-15 Freeway, the future on-site interior traffic noise impacts will be *less than significant*.

TABLE 8-3: INTERIOR NOISE LEVELS (CNEL)

Receiver Location	Floor	Noise Level at Façade[1]	Required Interior NR[2]	Minimum Interior NR[3]	Upgraded Windows[4]	Interior Noise Level[5]	Threshold	Threshold Exceeded?
Hotel	1	66.3	21.3	30.0	Yes	36.3	45	No
	2	71.5	26.5	30.0	Yes	41.5	45	No
	3	71.4	26.4	30.0	Yes	41.4	45	No
	4	71.4	26.4	30.0	Yes	41.4	45	No

[1] Exterior noise level at the facade with a windows closed condition requiring a means of mechanical ventilation (e.g. air conditioning).
[2] Noise reduction required to satisfy the City of Corona 45 dBA CNEL interior noise standard for noise sensitive uses.
[3] Estimated interior noise reduction with upgraded windows with an STC rating of 30.
[4] Does the required interior noise reduction trigger upgraded windows with a minimum STC rating of 30?
[5] Estimated interior noise level with STC rating of for all windows facing the I-15 Freeway.
"NR" = Noise Reduction

This page intentionally left blank

9 RECEIVER LOCATIONS

To assess the potential for long-term operational and short-term construction noise impacts, the following sensitive receiver locations, as shown on Exhibit 9-A, were identified as representative locations for analysis. Consistent with CEQA Guidelines Section 15125, the noise sensitive locations described below represent only those locations *as they exist at the time the notice of preparation (NOP) is published.* The Bedford Marketplace NOP was published on October 28, 2019 prior to the development and occupancy of the future residential community (Tentative Tract Map No. 37644) located west of Bedford Canyon Road. Therefore, no receivers have been identified for the planned Tentative Tract Map No. 37644 since the Bedford Marketplace will likely be developed prior to occupancy of the nearby residential community. However, noise sensitive receivers have been identified for existing Bedford South Corona community (Tentative Tract Map No. 37030).

Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include multi-family dwellings, hotels, motels, dormitories, out-patient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

Receiver locations are located in outdoor living areas (e.g., backyards) at 10 feet from any existing or proposed barriers or at the building façade, whichever is closer to the Project site, based on FHWA guidance, and consistent with additional guidance provided by Caltrans and the FTA, as previously described in Section 5.2. Sensitive receiver locations in the Project study area include residential uses and a church, as described below. Other sensitive land uses in the Project study area that are located at greater distances than those identified in this noise study will experience lower noise levels than those presented in this report due to the additional attenuation from distance and the shielding of intervening structures.

R1: Located approximately 285 feet northwest of the Project site, R1 represents existing residential homes north of Eagle Glen Parkway. A 24-hour noise measurement was taken near this location, L1, to describe the existing ambient noise environment.

R2: Location R2 represents the existing residential homes located west of the Project site at roughly 1,343 feet, on the west side of Glen Eagle Parkway. A 24-hour noise measurement was taken near this location, L1, to describe the existing ambient noise environment.

R3: Location R3 represents the existing residential homes on the east side of North Weirick Road at approximately 1,276 feet from the Project site. A 24-hour noise measurement near this location, L3, is used to describe the existing ambient noise environment.

R4: Location R4 represents the existing residential homes on the south side of Glen Road at approximately 1,137 feet from the Project site. A 24-hour noise measurement near this location, L4, is used to describe the existing ambient noise environment.

R5: Location R5 represents the Hudson House outdoor community center recreation area for the Bedford South Corona community located approximately 1,502 feet from the Project site. A 24-hour noise measurement near this location, L2, is used to describe the existing ambient noise environment.

EXHIBIT 9-A: SENSITIVE RECEIVER LOCATIONS



This page intentionally left blank

10 OPERATIONAL IMPACTS

This section analyzes the potential operational noise impacts due to the Project's stationary noise sources on the off-site sensitive receiver locations identified in Section 9. Exhibit 10-A identifies the noise source locations used to assess the Project-related operational noise levels.

10.1 REFERENCE NOISE LEVELS

To estimate the Project operational noise impacts, reference noise level measurements were collected from similar types of activities to represent the noise levels expected with the development of the proposed Project. This section provides a detailed description of the reference noise level measurements shown on Table 10-1 used to estimate the Project operational noise impacts.

It is important to note that the following projected noise levels assume the worst-case noise environment with the roof-top air conditioning units, drive-thru speakerphones, trash enclosures, parking lots, gas station activity, car wash tunnel, car wash vacuums, and outdoor playground activity all operating simultaneously. These noise level impacts will vary throughout the day. All noise sources were modeled assuming peak operational activity with no periods of inactivity, and are assumed to operate simultaneously, to present a conservative analysis.

TABLE 10-1: REFERENCE NOISE LEVEL MEASUREMENTS

Noise Source	Measurement Duration (hh:mm:ss)	Distance From Source (Feet)	Noise Source Height (Feet)	Reference Noise Levels (dBA L_{50})	
				@ Ref. Dist.	@ 50 Feet
Roof-Top Air Conditioning Units[1]	96:00:00	5'	5'	74.4	54.4
Drive-Through Speakerphone[2]	00:03:00	15'	3'	60.9	50.4
Trash Enclosure Activity[3]	00:00:32	5'	5'	69.0	49.0
Commercial Parking Lot[4]	00:15:00	5'	5'	56.7	36.7
Gas Station Activities[5]	01:00:00	5'	5'	65.6	45.6
Car Wash Tunnel[6]	00:03:04	10'	8'	81.6	67.6
Car Wash Vacuum[7]	00:01:02	5'	3'	74.2	54.2
Outdoor Playground[8]	00:15:00	5'	5'	61.7	41.7

[1] As measured by Urban Crossroads, Inc. on 7/27/2015 at the Santee Walmart located at 170 Town Center Parkway.
[2] As measured by Urban Crossroads, Inc. on 12/19/2014 at a Panera Bread drive-thru in the City of Brea.
[3] As measured by Urban Crossroads, Inc. on 5/3/2018 at trash enclosure in a parking lot in the City of Costa Mesa.
[4] As measured by Urban Crossroads, Inc. on 5/30/2012 at the Laguna Niguel Walmart located at 27470 Alicia Parkway.
[5] As measured by Urban Crossroads, Inc. on 4/26/2016 at an ARCO gas station located at 6501 Quail Hill Parkway in the City of Irvine.
[6] As measured by Urban Crossroads, Inc. on 6/6/2016 at the Audi Mission Viejo Dealership located at 28451 Marguerite Parkway.
[7] As measured by Urban Crossroads, Inc. on 5/27/2011 at an express car wash located at 1195 Baker Street in Costa Mesa.
8 As measured by Urban Crossroads, Inc. on 10/8/2014 at an outdoor playground in Ladera Ranch.

EXHIBIT 10-A: OPERATIONAL NOISE SOURCE LOCATIONS



10.1.1 ROOF-TOP AIR CONDITIONING UNITS

To assess the noise levels created by the roof-top air conditioning units at the Project site, reference noise levels measurements were taken at the Santee Walmart on July 27th, 2015. Located at 170 Town Center Parkway in the City of Santee, the noise level measurements describe a single mechanical roof-top air conditioning unit on the roof of an existing Walmart store with additional background units. The reference noise level represents a Lennox SCA120 series 10-ton model packaged air conditioning unit in addition to background units operating simultaneously. Using a uniform reference distance of 50 feet, the reference noise level noise level is 54.4 dBA L_{50}. The operating conditions of the reference noise level measurement reflect peak summer cooling requirements with measured temperatures approaching 96 degrees Fahrenheit (°F) with average daytime temperatures of 82°F. The noise attenuation provided by a parapet wall is not reflected in this reference noise level measurement.

10.1.2 DRIVE-THROUGH SPEAKERPHONE

To describe the potential noise level impacts associated with potential drive-through speakerphones and vehicle activities, a reference noise level measurement was collected on Friday, December 19th, 2014 at a Panera Bread restaurant located at 423 South Associated Road in the City of Brea. The reference noise levels collected at the Panera Bread restaurant are expected to reflect potential drive-through speakerphone noise level activities at the Project site, since the reference measurement includes both drive-through speakerphone and vehicle activity noise. The noise sources included in the reference noise level measurement consist of voices of the Panera Bread employees over the speakerphone, customers' voices ordering food, car engines idling, car radios playing music, and cars queuing in the drive-through lane. At 50 feet from the speakerphone, a reference noise level of 50.4 dBA L_{50} was measured. This reference noise level measurement overstates the actual average noise levels since it represents the average of 28 speakerphone menu board ordering events observed over a two-hour period. In other words, the Panera Bread speakerphone menu board reference noise level describes continuous drive-through operations and does not include any periods of inactivity.

10.1.3 TRASH ENCLOSURE ACTIVITY

To describe the noise levels associated with a trash enclosure, Urban Crossroads collected a reference noise level measurement on May 3rd, 2018 at an existing commercial and office park trash enclosure within a parking lot on the northeast corner of Baker Street and Red Hill Avenue. The measured reference noise level at the uniform 50-foot reference distance is 49.0 dBA L_{50} for the trash enclosure activity. The trash enclosure activity noise levels include two metal gates opening and closing, metal scraping against concrete floor sounds, dumpster movement on metal wheels, trash dropping into the metal dumpster, and background parking lot vehicle movements.

10.1.4 COMMERCIAL PARKING LOT

To determine the noise levels associated with commercial parking lot vehicle movements, Urban Crossroads collected reference noise level measurements at the Laguna Niguel Walmart located at 27470 Alicia Parkway on May 30, 2012. The 15-minute noise level measurement indicates that the parking lot vehicle movements generates noise levels of 36.7 dBA L_{50} at a normalized distance of 50 feet. The parking lot noise levels are mainly due to cars pulling in and out of spaces, car alarms sounding, and customers moving shopping carts.

10.1.5 GAS STATION ACTIVITIES

To describe the potential noise level impacts created by the gas station of the Project, a reference noise level measurement was collected on Tuesday, April 26th, 2016 at an ARCO gas station located at 6501 Quail Hill Parkway in the City of Irvine. The reference noise level measurement includes six cars fueling at once, car doors closing, engines starting, fuel pump TV sounds and background car pass-by events within a 3-minute period. At 50 feet from the gas station, a reference noise level of 45.6 dBA L_{50} was measured.

10.1.6 CAR WASH TUNNEL AIR BLOWERS

On June 10th, 2016, a reference noise level measurement was taken by Urban Crossroads at the Audi Mission Viejo dealership to describe the air blowers used in a car wash tunnel. A reference noise level of 67.6 dBA L_{50} was measured at the uniform distance of 50 feet. The reference noise level measurement includes an exposed five-unit air blower system with background pressure washer noise and is used to represent the proposed Project facilities. It is anticipated that the air dryers within the proposed car wash will operate continuously during the peak operating conditions. Further, this noise analysis does not include any additional attenuation or directional influence provided by locating the car wash air blower and dryer equipment inside the tunnel itself, but rather, models the tunnel exit activities as occurring at the building façade. As such, the analysis may conservatively overstate actual noise levels produced by the car wash tunnel air blower and dryer equipment.

10.1.7 CAR WASH VACUUM ACTIVITY

To represent the self-serve vacuums within the Project site, a reference noise level measurement was collected on May 27th, 2011 at an express car wash located at 1195 Baker Street in the City of Costa Mesa. The reference noise level measurement represents up to four vacuums operating simultaneously at the Costa Mesa express car wash. At a uniform reference distance of 50 feet, the vacuum reference noise level is 54.2 dBA L_{50}. This reference car wash vacuum activity noise level is anticipated to conservatively overstate those of the Project, since this reference noise level includes more vacuums operating simultaneously (4 vacuums) than what will be possible at the Project site (2 vacuums).

10.1.8 OUTDOOR PLAYGROUND ACTIVITIES

To describe the potential noise level impacts associated with the Project's playground activities ("tot-lot" and turf play areas), a reference noise level measurement was collected on Wednesday, October 8th, 2014 at the Founders Park in the City of Ladera Ranch. The reference noise levels collected at the Founders Park are expected to reflect the noise level activities at the tot-lot and turf play areas within Project site, since the reference noise level measurement includes tot-lot activities, girls youth soccer, coaches shouting instructions, parents speaking on cell phones, kids playing on swing sets, cheering and clapping. At a uniform reference distance of 50 feet, the outdoor playground activity reference noise level is 41.7 dBA L_{50}.

10.2 PROJECT OPERATIONAL NOISE LEVELS

Based upon the reference noise levels, it is possible to estimate the Project operational stationary-source noise levels at each of the sensitive receiver locations. The operational noise level calculations shown on Table 10-2 account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. Hard site conditions are used in the operational noise analysis which result in noise levels that attenuate (or decrease) at a rate of 6 dBA for each doubling of distance from a point source. The basic noise attenuation equation shown below is used to calculate the distance attenuation based on a reference noise level (SPL_1):

$$SPL_2 = SPL_1 - 20\log(D_2/D_1)$$

Where SPL_2 is the resulting noise level after attenuation, SPL_1 is the source noise level, D_2 is the distance to the reference sound pressure level (SPL_1), and D_1 is the distance to the receiver location.

Table 10-2 indicates that the unmitigated combined Project operational noise levels associated with the roof-top air conditioning units, drive-thru speakerphones, trash enclosures, parking lots, gas station activity, car wash tunnel, car wash vacuums, and outdoor playground activity are expected to range from 32.7 to 40.0 dBA L_{50} at the noise-sensitive off-site receiver locations. The unmitigated operational noise level calculation worksheets are included in Appendix 10.1.

TABLE 10-2: UNMITIGATED PROJECT OPERATIONAL NOISE LEVELS

Receiver Location[1]	Noise Sources[2]	Distance (Feet)	Operational Noise Levels (dBA)[3]				
			L_{50} (30 mins)	L_{25} (15 mins)	L_8 (5 mins)	L_2 (1 min)	L_{max} (Anytime)
R1	Air Conditioning Unit (Roof-Top)	445'	28.5	30.2	31.5	31.8	32.3
	Drive-Through Speakerphone	741'	20.3	21.5	23.0	24.7	25.8
	Trash Enclosure	517'	16.6	22.6	29.6	34.6	36.1
	Parking Lot	574'	8.5	12.5	15.5	18.9	31.3
	Gas Station Activity	591'	17.1	18.4	21.0	25.9	33.9
	Car Wash Tunnel	575'	39.4	49.8	50.4	51.1	51.6
	Car Wash Vacuum Activity	608'	25.6	26.8	28.6	29.4	30.2
	Outdoor Playground	741'	11.5	13.9	16.8	19.5	23.7
	Combined Noise Level:		40.0	49.9	50.5	51.3	51.9
R2	Air Conditioning Unit (Roof-Top)	1,815'	23.2	24.9	26.2	26.5	27.0
	Drive-Through Speakerphone	2,777'	15.6	16.8	18.3	20.0	21.1
	Trash Enclosure	1,910'	12.6	18.6	25.6	30.6	32.1
	Parking Lot	1,775'	5.7	9.7	12.7	16.1	28.5
	Gas Station Activity	2,940'	10.2	11.5	14.1	19.0	27.0
	Car Wash Tunnel	3,108'	31.8	42.2	42.8	43.5	44.0
	Car Wash Vacuum Activity	2,878'	19.0	20.2	22.0	22.8	23.6
	Outdoor Playground	1,877'	10.2	12.6	15.5	18.2	22.4
	Combined Noise Level:		32.7	42.3	43.0	43.9	44.6
R3	Air Conditioning Unit (Roof-Top)	1,896'	22.8	24.5	25.8	26.1	26.6
	Drive-Through Speakerphone	2,604'	16.1	17.3	18.8	20.5	21.6
	Trash Enclosure	1,847'	12.9	18.9	25.9	30.9	32.4
	Parking Lot	1,834'	5.4	9.4	12.4	15.8	28.2
	Gas Station Activity	2,772'	10.7	12.0	14.6	19.5	27.5
	Car Wash Tunnel	2,876'	32.4	42.8	43.4	44.1	44.6
	Car Wash Vacuum Activity	2,752'	19.4	20.6	22.4	23.2	24.0
	Outdoor Playground	1,743'	10.9	13.3	16.2	18.9	23.1
	Combined Noise Level:		33.2	42.9	43.6	44.5	45.2

Receiver Location[1]	Noise Sources[2]	Distance (Feet)	Operational Noise Levels (dBA)[3]				
			L_{50} (30 mins)	L_{25} (15 mins)	L_8 (5 mins)	L_2 (1 min)	L_{max} (Anytime)
R4	Air Conditioning Unit (Roof-Top)	1,230'	20.3	22.0	23.3	23.6	24.1
	Drive-Through Speakerphone	1,244'	16.0	17.2	18.7	20.4	21.5
	Trash Enclosure	1,251'	9.7	15.7	22.7	27.7	29.2
	Parking Lot	1,148'	2.8	6.8	9.8	13.2	25.6
	Gas Station Activity	1,208'	11.4	12.7	15.3	20.2	28.2
	Car Wash Tunnel	1,303'	32.9	43.3	43.9	44.6	45.1
	Car Wash Vacuum Activity	1,358'	19.2	20.4	22.2	23.0	23.8
	Outdoor Playground	1,744'	4.6	7.0	9.9	12.6	16.8
	Combined Noise Level:		33.4	43.4	44.0	44.8	45.4
R5	Air Conditioning Unit (Roof-Top)	1,637'	24.1	25.8	27.1	27.4	27.9
	Drive-Through Speakerphone	1,961'	18.6	19.8	21.3	23.0	24.1
	Trash Enclosure	1,635'	13.9	19.9	26.9	31.9	33.4
	Parking Lot	1,647'	6.3	10.3	13.3	16.7	29.1
	Gas Station Activity	2,096'	13.2	14.5	17.1	22.0	30.0
	Car Wash Tunnel	2,239'	34.6	45.0	45.6	46.3	46.8
	Car Wash Vacuum Activity	2,181'	21.4	22.6	24.4	25.2	26.0
	Outdoor Playground	1,561'	11.8	14.2	17.1	19.8	24.0
	Combined Noise Level:		35.3	45.1	45.8	46.6	47.3

[1] See Exhibit 10-A for the noise source locations.
[2] Reference noise sources as shown on Table 10-1.
[3] Stationary source noise level calculations are provided in Appendix 10.1.

10.3 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE

Table 10-3 indicates that the noise levels associated with Project operational noise sources are expected to range from 32.7 to 40.0 dBA L_{50} at sensitive off-site sensitive receiver locations. Table 10-3 shows that the Project operational-source noise levels at potentially affected receivers satisfy the City of Corona daytime and nighttime exterior noise level standards without mitigation. Therefore, the unmitigated Project operational noise level impacts are considered *less than significant.*

TABLE 10-3: OPERATIONAL NOISE LEVEL COMPLIANCE

Receiver Location[1]	Land Use	Noise Level at Receiver Locations (dBA)[2]					Threshold Exceeded?[3]	
		L_{50} (30 mins)	L_{25} (15 mins)	L_8 (5 mins)	L_2 (1 min)	L_{max} (Anytime)	Daytime	Nighttime
Exterior Noise Level Standards	**Daytime Residential**	**55**	**60**	**65**	**70**	**75**	**-**	**-**
	Nighttime Residential	**50**	**55**	**60**	**65**	**70**	**-**	**-**
R1	Residential	40.0	49.9	50.5	51.3	51.9	No	No
R2	Residential	32.7	42.3	43.0	43.9	44.6	No	No
R3	Residential	33.2	42.9	43.6	44.5	45.2	No	No
R4	Residential	33.4	43.4	44.0	44.8	45.4	No	No
R5	Residential	35.3	45.1	45.8	46.6	47.3	No	No

[1] See Exhibit 10-A for the noise source locations.
[2] Estimated Project operational noise levels as shown on Table 10-2.
[3] Do the Project operational noise levels satisfy the operational noise level standards?
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

10.4 PROJECT OPERATIONAL NOISE LEVEL CONTRIBUTIONS

To describe the Project operational noise level contributions, the Project operational noise levels are combined with the existing ambient noise levels measurements for the nearby receiver locations potentially impacted by Project operational noise sources. Since the units used to measure noise, decibels (dB), are logarithmic units, the Project-operational and existing ambient noise levels cannot be combined using standard arithmetic equations. (3) Instead, they must be logarithmically added using the following base equation:

$$SPL_{Total} = 10\log_{10}[10^{SPL1/10} + 10^{SPL2/10} + \ldots 10^{SPLn/10}]$$

Where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describe the Project noise level contributions to the existing ambient noise environment. Noise levels that would be experienced at receiver locations when Project-source noise is added to the daytime and nighttime ambient conditions are presented on Tables 10-4 and 10-5, respectively.

As indicated on Tables 10-4 and 10-5, the Project will generate daytime and nighttime operational noise level increases of up to 0.2 dBA L_{50} at the nearby receiver locations. Since the Project-related operational noise level contributions with mitigation will satisfy the operational noise level increase significance criteria presented in Table 4-2, the increases at the sensitive receiver locations will be *less than significant*.

TABLE 10-4: PROJECT DAYTIME OPERATIONAL NOISE CONTRIBUTIONS

Receiver Location[1]	Unmitigated Project Operational Noise Level (dBA)[2]	Meas. Location[3]	Reference Ambient Noise Levels (dBA)[4]	Combined Project and Ambient (dBA)[5]	Project Increase (dBA)[6]	Threshold (dBA)[7]	Threshold Exceeded?[7]
R1	40.0	L1	60.2	60.2	0.0	3.0	No
R2	32.7	L1	60.2	60.2	0.0	3.0	No
R3	33.2	L3	52.0	52.1	0.1	5.0	No
R4	33.4	L4	47.7	47.9	0.2	5.0	No
R5	35.3	L2	54.4	54.5	0.1	5.0	No

[1] See Exhibit 9-A for the sensitive receiver locations.
[2] Total Project operational noise levels as shown on Table 10-2.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] FICON significance criteria as defined in Section 4, Table 4-1, based on the ambient noise level without the Project.

TABLE 10-5: PROJECT NIGHTTIME OPERATIONAL NOISE CONTRIBUTIONS

Receiver Location[1]	Unmitigated Project Operational Noise Level (dBA)[2]	Meas. Location[3]	Reference Ambient Noise Levels (dBA)[4]	Combined Project and Ambient (dBA)[5]	Project Increase (dBA)[6]	Threshold (dBA)[7]	Threshold Exceeded?[7]
R1	40.0	L1	53.7	53.9	0.2	5.0	No
R2	32.7	L1	53.7	53.7	0.0	5.0	No
R3	33.2	L3	50.8	50.9	0.1	5.0	No
R4	33.4	L4	47.7	47.9	0.2	5.0	No
R5	35.3	L2	52.1	52.2	0.1	5.0	No

[1] See Exhibit 9-A for the sensitive receiver locations.
[2] Total Project operational noise levels as shown on Table 10-2.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] FICON significance criteria as defined in Section 4, Table 4-1, based on the ambient noise level without the Project.

This page intentionally left blank

11 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 11-A shows the boundaries of the soil import/export activity area and the construction activity areas at the Project site in relation to the nearby sensitive receiver locations.

11.1 CONSTRUCTION NOISE LEVELS

Noise generated by the Project construction equipment will include a combination of trucks, power tools, concrete mixers, and portable generators that when combined can reach high levels. The number and mix of construction equipment are expected to occur in the following stages:

- Soil Import/Export
- Grading
- Building Construction
- Paving
- Architectural Coating

This construction noise analysis was prepared using reference noise level measurements taken by Urban Crossroads, Inc. to describe the typical construction activity noise levels for each stage of Project construction. The construction reference noise level measurements represent a list of typical construction activity noise levels. Noise levels generated by heavy construction equipment can range from approximately 68 dBA to in excess of 80 dBA when measured at 50 feet. Hard site conditions are used in the construction noise analysis which result in noise levels that attenuate (or decrease) at a rate of 6 dBA for each doubling of distance from a point source (i.e. construction equipment). For example, a noise level of 80 dBA measured at 50 feet from the noise source to the receiver would be reduced to 74 dBA at 100 feet from the source to the receiver and would be further reduced to 68 dBA at 200 feet from the source to the receiver. The construction stages used in this analysis are consistent with the data used to support the construction emissions in the *Bedford Marketplace Air Quality Impact Analysis* prepared by Urban Crossroads, Inc. (21)

11.2 CONSTRUCTION REFERENCE NOISE LEVELS

To describe the Project construction noise levels, measurements were collected for similar activities at several construction sites. Table 11-1 provides a summary of the construction reference noise level measurements. Since the reference noise levels were collected at varying distances, all construction noise level measurements presented on Table 11-1 have been adjusted to describe a common reference distance of 50 feet.

EXHIBIT 11-A: CONSTRUCTION NOISE SOURCE LOCATIONS



LEGEND:

- Receiver Locations
- 6' Existing Barrier Height (in feet)
- Existing Barrier
- Phase 2B Borrow
- FST Sand and Gravel Mine Borrow'
- Construction Area
- Distance from receiver to construction activity (in feet)

TABLE 11-1: CONSTRUCTION REFERENCE NOISE LEVELS

ID	Noise Source	Duration (h:mm:ss)	Reference Distance From Source (Feet)	Reference Noise Levels @ Reference Distance (dBA L_{max})	Reference Noise Levels @ 50 Feet (dBA L_{max})[6]
1	Truck Pass-Bys & Dozer Activity[1]	0:01:15	30'	68.1	63.7
2	Dozer Activity[1]	0:01:00	30'	76.4	72.0
3	Construction Vehicle Maintenance Activities[2]	0:01:00	30'	74.8	70.4
4	Foundation Trenching[2]	0:01:01	30'	74.9	70.5
5	Rough Grading Activities[2]	0:05:00	30'	84.8	80.4
6	Framing[3]	0:02:00	30'	76.7	72.3
7	Scraper, Water Truck, & Dozer Activity[4]	0:30:00	30'	87.7	83.3
8	Concrete Mixer Truck Movements[5]	0:01:00	50'	73.1	73.1
9	Concrete Paver Activities[5]	0:01:00	30'	75.7	71.3
10	Concrete Mixer Pour & Paving Activities[5]	0:01:00	30'	76.3	71.9
11	Concrete Mixer Backup Alarms & Air Brakes[5]	0:00:20	50'	78.8	78.8
12	Concrete Mixer Pour Activities[5]	1:00:00	50'	79.2	79.2

[1] As measured by Urban Crossroads, Inc. on 10/14/15 at a business park construction site located at the northwest corner of Barranca Parkway and Alton Parkway in the City of Irvine.
[2] As measured by Urban Crossroads, Inc. on 10/20/15 at a construction site located in Rancho Mission Viejo.
[3] As measured by Urban Crossroads, Inc. on 10/20/15 at a residential construction site located in Rancho Mission Viejo.
[4] As measured by Urban Crossroads, Inc. on 10/30/15 during grading operations at an industrial construction site in the City of Ontario.
[5] Reference noise level measurements were collected from a nighttime concrete pour at an industrial construction site, located at 27334 San Bernardino Avenue in the City of Redlands, between 1:00 a.m. to 2:00 a.m. on 7/1/15.
[6] Reference noise levels are calculated at 50 feet using a drop off rate of 6 dBA per doubling of distance (point source).

11.3 SOIL IMPORT/EXPORT CONSTRUCTION BORROW SITES

To bring the Modified Bedford Marketplace Project Site up to an elevation similar (within five feet) of the existing 10-acre commercial pad, import of approximately 440,000 cubic yards of dirt is required. The applicant has identified two potential borrow sites to provide the necessary fill dirt. The FST Sand and Gravel Mine, located east of the I-15 Freeway and the Arantine Hills Specific Plan Phase 2B site as shown on Exhibit 11-A.

11.3.1 FST SAND AND GRAVEL MINE BORROW SITE

The import operation is expected to include 250 full loads per night, assuming 15 cubic yards per load, for a total of 3,750 cubic yards per night. To import 440,000 cubic yards, approximately 118 nights of import would be required. The Project proposes to import dirt during the hours (8:00 p.m. to 4:00 a.m.) and complete grading operations both during daytime and nighttime hours.

During the nighttime hours, dirt would be imported to the Modified Project Site, dumped, and placed by grading equipment. Daytime grading activities would initially last for approximately two weeks and begin before import and overlap with initial import operations. The daytime activities include remedial grading, which requires the over-excavation of approximately four to six feet below existing ground surface. The over-excavated material would be stockpiled on site.

Additional daytime grading would occur after imported material has be placed in the over-excavated areas to bring the site closer to proposed grades. The stockpiled material would then be placed over the imported material to create the finished building pad, compacted to meet geotechnical specifications. According to the Project applicant, every effort will be made to limit on-site construction activities particularly during the noise sensitive nighttime hours. For this reason, the Applicant is proposing to limit nighttime operations to permit only the essential equipment needed to support the soil import/export haul truck operations. This focused on-site construction noise analysis is based on the following construction equipment profile:

Daytime: During the daytime hours from 7:00 a.m. to 7:00 p.m. the project will rely on the following equipment for the over-excavation activities:

- three (3) Caterpillar 651 scrapers
- one (1) tracked bulldozer (Caterpillar D-8)
- one (1) water truck

Nighttime: According the Project applicant nighttime (8:00 p.m. to 4:00 a.m.) construction activities will be limited to the following construction equipment:

- one (1) rubber tire bulldozer, such as a Caterpillar 834, would be used to move and compact the imported dirt. The site is large enough to avoid backing up and the use of warning signals. Additionally, the rubber tire equipment would be used to avoid the noise from tracked equipment.
- one (1) water truck (4,000 gallon)
- one (1) street sweeper would be used during the import operation.

11.3.2 PHASE 2B BORROW SITE

As a potential borrow site, Phase 2B could provide the necessary source of dirt to support the planned Bedford Marketplace pad elevation increase. Preliminary estimates suggest that the existing Phase 2B site will be lowered by approximately 13 feet to provide the necessary supply of dirt for import. Due to the proximity to the Bedford Marketplace, import of dirt from Phase 2B will limited to the daytime hours from 7:00 a.m. to 7:00 p.m.

11.4 SOIL IMPORT/EXPORT CONSTRUCTION NOISE ANALYSIS

To describe the soil import/export construction noise impacts at nearby noise sensitive receiver locations, exterior noise levels have been calculated for the daytime and the potential nighttime activities.

11.4.1 SOIL IMPORT/EXPORT CONSTRUCTION NOISE ANALYSIS (DAYTIME)

Based on the daytime construction equipment profile, Table 11-2 provides a summary of the estimated daytime construction noise levels for each borrow site at each of the sensitive receiver locations nearest the soil import/export area identified on Exhibit 11-A. Table 11-2 shows that the daytime import/export construction noise levels will range from 51.2 to 59.1 dBA L_{max} for the FST Sand and Gravel Mine borrow site. Since Phase 2B borrow site is closer to the nearby receiver

locations, the daytime import/export construction noise levels will range from 49.0 to 68.0 dBA L_{max}

TABLE 11-2: SOIL IMPORT/EXPORT ACTIVITY NOISE LEVELS (DAYTIME)

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{max})
Truck Pass-Bys & Dozer Activity	63.7
Dozer Activity	72.0
Rough Grading Activities	80.4
Scraper, Water Truck, & Dozer Activity	83.3
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	83.3

Borrow Site	Receiver Location	Distance to Closest Fill Site Activity (Feet)[2]	Distance Attenuation (dBA L_{max})[3]	Estimated Noise Barrier Attenuation (dBA L_{max})[4]	Construction Noise Level (dBA L_{max})
FST Sand and Gravel Mine	R1	808'	-24.2	0.0	59.1
	R2	1,435'	-29.2	0.0	54.1
	R3	1,830'	-31.3	0.0	52.0
	R4	1,549'	-29.8	0.0	53.4
	R5	2,016'	-32.1	0.0	51.2
Phase 2B	R1	2,569'	-34.2	0.0	49.0
	R2	289'	-15.2	0.0	68.0
	R3	524'	-20.4	0.0	62.9
	R4	2,502'	-34.0	0.0	49.3
	R5	1,207'	-27.7	0.0	55.6

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Estimated barrier attenuation from existing barriers in the Project study area, if any.

11.4.2 SOIL IMPORT/EXPORT CONSTRUCTION NOISE ANALYSIS (NIGHTTIME)

Based on the nighttime construction equipment profile for the FST Sand and Gravel Mine construction activity, Table 11-3 provides a summary of the estimated nighttime construction noise levels at each of the sensitive receiver locations. No nighttime construction is needed to support the Phase 2B borrow site. As shown on Table 11-3 the Project-related daytime soil import/export construction noise levels when the highest reference noise level is operating will range from 39.9 to 47.8 dBA L_{max}.

TABLE 11-3: SOIL IMPORT/EXPORT ACTIVITY NOISE LEVELS (NIGHTTIME)

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{max})
Truck Pass-Bys & Dozer Activity	63.7
Dozer Activity	72.0
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	72.0

Borrow Site	Receiver Location	Distance to Closest Fill Site Activity (Feet)[2]	Distance Attenuation (dBA L_{max})[3]	Estimated Noise Barrier Attenuation (dBA L_{max})[4]	Construction Noise Level (dBA L_{max})
FST Sand and Gravel Mine	R1	808'	-24.2	0.0	47.8
	R2	1,435'	-29.2	0.0	42.8
	R3	1,830'	-31.3	0.0	40.7
	R4	1,549'	-29.8	0.0	42.1
	R5	2,016'	-32.1	0.0	39.9

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Estimated barrier attenuation from existing barriers in the Project study area, if any.

11.5 SOIL IMPORT/EXPORT NOISE COMPLIANCE

To analyze noise impacts originating from the construction of the Bedford Marketplace, noise from construction activities are typically evaluated against standards established under a City's Municipal Code. The City of Corona Municipal Code, Section 17.84.040(D)(2) establishes the permitted hours during which construction within the City of Corona may take place, between 7:00 a.m. to 8:00 p.m. on Mondays through Saturdays, and 10:00 a.m. to 6:00 p.m. on Sundays and holidays. (11) Therefore, the planned nighttime Project soil import/export activity will require a noise variance consistent with the provisions outlined in the City of Corona Municipal Code Section 17.84.040(H)(1) to perform the evening and nighttime grading activities.

For daytime construction activities, this analysis relies on the City of Corona Municipal Code Section 17.84.040 permitted daytime operational noise standards for residential properties to establish the exterior construction noise level criteria. Based on these criteria, a daytime exterior noise level of 75 dBA L_{max} is be used to describe the maximum acceptable threshold for determining the impacts due to Project construction for sensitive receivers. To account for the noise sensitive nighttime hours between 10:00 p.m. and 7:00 a.m., this analysis relies on a maximum exterior noise level of 50 dBA L_{max}.

11.5.1 SOIL IMPORT/EXPORT NOISE COMPLIANCE (DAYTIME)

As shown on Table 11-4 the estimated Project daytime construction noise levels will approach 59.1 dBA L_{max} for construction activity associated with the FST Sand and Gravel Mine and 68.0 dBA L_{max} for Phase 2B construction activity. The analysis shows that either borrow site will satisfy the City of Corona maximum acceptable threshold for determining the impacts due to Project construction for sensitive receiver's daytime exterior noise level of 75 dBA L_{max}. Therefore, based on the results of the analysis, all nearby receiver locations will experience *less than significant* impacts due to the daytime soil import/export noise construction noise levels at the Project site.

TABLE 11-4: SOIL IMPORT/EXPORT NOISE COMPLIANCE (DAYTIME)

Borrow Site	Receiver Location[1]	Unmitigated Construction Noise Levels (dBA L_{max})[2]	Daytime	
			Threshold (dBA L_{max})[3]	Threshold Exceeded?[4]
FST Sand and Gravel Mine	R1	59.1	75	No
	R2	54.1	75	No
	R3	52.0	75	No
	R4	53.4	75	No
	R5	51.2	75	No
Phase 2B	R1	49.0	75	No
	R2	68.0	75	No
	R3	62.9	75	No
	R4	49.3	75	No
	R5	55.6	75	No

[1] Noise receiver locations are shown on Exhibit 9-A
[2] Estimated daytime construction noise levels, as shown on Table 11-2
[3] City of Corona Daytime Construction noise standard.
[4] Do the estimated Project construction noise levels satisfy the construction noise level threshold?

11.5.2 SOIL IMPORT/EXPORT NOISE COMPLIANCE (NIGHTTIME)

As shown on Table 11-5 the estimated Project nighttime construction noise levels from the import of dirt from the FST Sand and Gravel Mine will satisfy the City of Corona 50 dBA L_{max} stationary source nighttime noise level thresholds at all receiver locations. Therefore, based on the results of the analysis, all nearby receiver locations will experience *less than significant* impacts due to the nighttime soil import/export noise construction noise levels at the Project site. However, planned nighttime Project soil import/export activity will require a noise variance consistent with the provisions outlined in the City of Corona Municipal Code Section 17.84.040(H)(1) to perform the evening and nighttime grading activities.

TABLE 11-5: SOIL IMPORT/EXPORT NOISE COMPLIANCE (NIGHTTIME)

Borrow Site	Receiver Location[1]	Unmitigated Construction Noise Levels (dBA L_{max})[2]	Nighttime	
			Threshold (dBA L_{max})[3]	Threshold Exceeded?[4]
FST Sand and Gravel Mine	R1	47.8	50	No
	R2	42.8	50	No
	R3	40.7	50	No
	R4	42.1	50	No
	R5	39.9	50	No

[1] Noise receiver locations are shown on Exhibit 9-A
[2] Estimated nighttime construction noise levels, as shown on Table 11-3
[3] City of Corona Nighttime Construction noise standard.
[4] Do the estimated Project construction noise levels satisfy the construction noise level threshold?

11.6 CONSTRUCTION NOISE ANALYSIS

Tables 11-6 to 11-9 show the Project construction stages and the reference construction noise levels used for each stage. Table 11-10 provides a summary of the noise levels from each stage of construction at each of the sensitive receiver locations. Based on the reference construction noise levels, the Project-related construction noise levels when the highest reference noise level is operating at the edge of primary construction activity nearest each sensitive receiver location will range from 50.9 to 63.9 dBA L_{max} at the noise-sensitive receiver locations, as shown on Table 11-10

TABLE 11-6: GRADING ACTIVITY NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{max})
Truck Pass-Bys & Dozer Activity	63.7
Dozer Activity	72.0
Rough Grading Activities	80.4
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	80.4

Receiver Location	Distance to Project Site Construction Activity (Feet)[2]	Distance Attenuation (dBA L_{max})[3]	Estimated Noise Barrier Attenuation (dBA L_{max})[4]	Construction Noise Level (dBA L_{max})
R1	332'	-16.4	0.0	63.9
R2	1,383'	-28.8	0.0	51.5
R3	1,303'	-28.3	0.0	52.0
R4	1,361'	-28.7	0.0	51.7
R5	1,494'	-29.5	0.0	50.9

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Estimated barrier attenuation from existing barriers in the Project study area, if any.

TABLE 11-7: BUILDING CONSTRUCTION ACTIVITY NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{max})
Construction Vehicle Maintenance Activities	70.4
Foundation Trenching	70.5
Framing	72.3
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	72.3

Receiver Location	Distance to Project Site Construction Activity (Feet)[2]	Distance Attenuation (dBA L_{max})[3]	Estimated Noise Barrier Attenuation (dBA L_{max})[4]	Construction Noise Level (dBA L_{max})
R1	332'	-16.4	0.0	55.8
R2	1,383'	-28.8	0.0	43.4
R3	1,303'	-28.3	0.0	43.9
R4	1,361'	-28.7	0.0	43.6
R5	1,494'	-29.5	0.0	42.8

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Estimated barrier attenuation from existing barriers in the Project study area, if any.

TABLE 11-8: PAVING ACTIVITY NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{max})
Concrete Mixer Truck Movements	73.1
Concrete Paver Activities	71.3
Concrete Mixer Pour & Paving Activities	71.9
Concrete Mixer Backup Alarms & Air Brakes	78.8
Concrete Mixer Pour Activities	79.2
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	79.2

Receiver Location	Distance to Project Site Construction Activity (Feet)[2]	Distance Attenuation (dBA L_{max})[3]	Estimated Noise Barrier Attenuation (dBA L_{max})[4]	Construction Noise Level (dBA L_{max})
R1	332'	-16.4	0.0	62.8
R2	1,383'	-28.8	0.0	50.4
R3	1,303'	-28.3	0.0	50.9
R4	1,361'	-28.7	0.0	50.5
R5	1,494'	-29.5	0.0	49.7

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Estimated barrier attenuation from existing barriers in the Project study area, if any.

TABLE 11-9: ARCHITECTURAL COATING ACTIVITY NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{max})
Construction Vehicle Maintenance Activities	70.4
Framing	72.3
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	72.3

Receiver Location	Distance to Project Site Construction Activity (Feet)[2]	Distance Attenuation (dBA L_{max})[3]	Estimated Noise Barrier Attenuation (dBA L_{max})[4]	Construction Noise Level (dBA L_{max})
R1	332'	-16.4	0.0	55.8
R2	1,383'	-28.8	0.0	43.4
R3	1,303'	-28.3	0.0	43.9
R4	1,361'	-28.7	0.0	43.6
R5	1,494'	-29.5	0.0	42.8

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Estimated barrier attenuation from existing barriers in the Project study area, if any.

TABLE 11-10: CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Construction Noise Levels by Stage (dBA L_{max})				
	Grading	Building Construction	Paving	Architectural Coating	Highest Construction Noise Level[2]
R1	63.9	55.8	62.8	55.8	63.9
R2	51.5	43.4	50.4	43.4	51.5
R3	52.0	43.9	50.9	43.9	52.0
R4	51.7	43.6	50.5	43.6	51.7
R5	50.9	42.8	49.7	42.8	50.9

[1] Noise receiver locations are shown on Exhibit 9-A.
[2] Estimated construction noise levels based on the highest reference construction activity for each stage.

11.7 CONSTRUCTION NOISE LEVEL COMPLIANCE

The construction noise analysis shows that the highest construction noise levels will occur when construction activities take place at the closest point from primary Project construction activity to each of the nearby receiver locations. As shown on Table 11-11, the unmitigated construction noise levels are expected to range from 50.9 to 63.9 dBA L_{max} at the nearby receiver locations.

To evaluate whether the Project will generate potentially significant short-term noise levels at off-site sensitive receiver locations a construction-related noise level threshold of 75 dBA L_{max} is used as acceptable thresholds for construction noise at the nearby sensitive receiver locations. Table 11-11 shows the highest construction noise levels at the potentially impacted receiver locations are expected to approach 63.9 dBA L_{max} and will satisfy the 75 dBA L_{max} daytime significance threshold during temporary Project construction activities. The noise impact due to unmitigated Project construction noise levels is, therefore, considered a *less than significant* impact at all nearby sensitive receiver locations.

TABLE 11-11: CONSTRUCTION EQUIPMENT NOISE LEVEL COMPLIANCE

Receiver Location[1]	Unmitigated Construction Noise Levels (dBA L_{max})[2]	Daytime	
		Threshold (dBA L_{max})[3]	Threshold Exceeded?[4]
R1	63.9	75	No
R2	51.5	75	No
R3	52.0	75	No
R4	51.7	75	No
R5	50.9	75	No

[1] Noise receiver locations are shown on Exhibit 11-A
[2] Estimated daytime construction noise levels, as shown on Table 11-2
[3] City of Corona Daytime Construction noise standard.
[4] Do the estimated Project construction noise levels satisfy the construction noise level threshold?

11.8 CONSTRUCTION VIBRATION IMPACTS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. The proposed Project's construction activities most likely to cause vibration impacts are:

- Heavy Construction Equipment: Although all heavy mobile construction equipment has the potential of causing at least some perceptible vibration while operating close to buildings, the vibration is usually short-term and is not of sufficient magnitude to cause building damage.
- Trucks: Trucks hauling building materials to construction sites can be sources of vibration intrusion if the haul routes pass through residential neighborhoods on streets with bumps or potholes. Repairing the bumps and potholes generally eliminates the problem.

Ground-borne vibration levels resulting from construction activities occurring within the Project site were estimated by data published by the Federal Transit Administration (FTA). Construction activities that would have the potential to generate low levels of ground-borne vibration within the Project site include mobile equipment activities and pile driving, among others. Using the vibration source level of construction equipment provided on Table 6-9 and the construction vibration assessment methodology published by the FTA, it is possible to estimate the Project vibration impacts. The construction vibration analysis is based on the shortest distance to either Project site construction or Excess Fill Dirt Site soil import/export activities. Based on the reference vibration levels provided by the FTA, a large bulldozer represents the peak source of vibration with a reference level of 0.089 in/sec PPV at a distance of 25 feet. At distances ranging from 332 to 1,494 feet from the Project site, construction vibration levels are expected to range from 0.000 to 0.002 in/sec PPV. In order to assess the human perception of vibration levels in PPV, as previously discussed in Section 3.6.2, the velocities are converted to RMS vibration levels based on the Caltrans *Transportation and Construction Vibration Guidance Manual* conversion factor of 0.71. Table 11-9 shows the construction vibration levels in RMS are expected to range from 0.000 to 0.001 in/sec (RMS) at the five receiver locations. Based on the City of Corona vibration standards, the proposed Project site will not include or require equipment, facilities, or activities that would result in a human response (annoyance).

The Project construction is not expected to generate vibration levels exceeding the City of Corona maximum acceptable vibration standard of 0.05 in/sec (RMS). Further, impacts at the site of the closest sensitive receiver are unlikely to be sustained during the entire construction period, but will occur rather only during the times that heavy construction equipment is operating proximate to the Project site perimeter. Moreover, construction at the Project site will be restricted to daytime hours consistent with City requirements thereby eliminating potential vibration impact during the sensitive nighttime hours. On this basis the potential for the Project to result in exposure of persons to, or generation of, excessive ground-borne vibration is determined to be *less than significant*.

TABLE 11-12: CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Receiver Location[1]	Distance To Property Line (In Feet)	Receiver PPV Levels (in/sec)[2]					RMS Velocity Levels[3] (in/sec)	Potential Significant Impact?[4]
		Small Bulldozer	Jack-hammer	Loaded Trucks	Large Bulldozer	Peak Vibration		
R1	332'	0.0001	0.0007	0.0016	0.0018	0.002	0.001	No
R2	1,383'	0.0000	0.0001	0.0002	0.0002	0.000	0.000	No
R3	1,303'	0.0000	0.0001	0.0002	0.0002	0.000	0.000	No
R4	1,361'	0.0000	0.0001	0.0002	0.0002	0.000	0.000	No
R5	1,494'	0.0000	0.0001	0.0002	0.0002	0.000	0.000	No

[1] Noise receiver locations are shown on Exhibit 11-A.
[2] Based on the Vibration Source Levels of Construction Equipment included on Table 6-9.
[3] Vibration levels in PPV are converted to RMS velocity using a 0.71 conversion factor identified in the Caltrans Transportation and Construction Vibration Guidance Manual, September 2013.
[4] Does the Peak Vibration exceed the City of Corona maximum acceptable vibration standard of 0.05 in/sec?

12 REFERENCES

1. **Urban Crossroads, Inc.** *Bedford Marketplace Traffic Study.* September 2019.
2. **State of California.** *California Environmental Quality Act, Appendix G.* 2018.
3. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
4. **Environmental Protection Agency Office of Noise Abatement and Control.** *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.* March 1974. EPA/ONAC 550/9/74-004.
5. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Noise and Air Quality Branch.** *Highway Traffic Noise Analysis and Abatement Policy and Guidance.* December 2011.
6. **U.S. Department of Transportation, Federal Highway Administration.** *Highway Traffic Noise in the United States, Problem and Response.* April 2000. p. 3.
7. **U.S. Environmental Protection Agency Office of Noise Abatement and Control.** *Noise Effects Handbook-A Desk Reference to Health and Welfare Effects of Noise.* October 1979 (revised July 1981). EPA 550/9/82/106.
8. **Office of Planning and Research.** *State of California General Plan Guidelines.* 2018.
9. **State of California.** *California Green Building Standards Code.* 2019.
10. **City of Corona.** *General Plan Public Health and Safety Element - Noise.* March 2004.
11. —. *Municipal Code, Section 17.84.040 Noise.*
12. **California Court of Appeal.** *Gray v. County of Madera, F053661.* 167 Cal.App.4th 1099; - Cal.Rptr.3d, October 2008.
13. **Federal Interagency Committee on Noise.** *Federal Agency Review of Selected Airport Noise Analysis Issues.* August 1992.
14. **American National Standards Institute (ANSI).** *Specification for Sound Level Meters ANSI S1.4-2014/IEC 61672-1:2013.*
15. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment.* May 2006. FTA-VA-90-1003-06.
16. **U.S. Department of Transportation, Federal Highway Administration.** *FHWA Highway Traffic Noise Prediction Model.* December 1978. FHWA-RD-77-108.
17. **California Department of Transportation Environmental Program, Office of Environmental Engineering.** *Use of California Vehicle Noise Reference Energy Mean Emission Levels (Calveno REMELs) in FHWA Highway Traffic Noise Prediction.* September 1995. TAN 95-03.
18. **California Department of Transportation.** *Traffic Noise Attenuation as a Function of Ground and Vegetation Final Report.* June 1995. FHWA/CA/TL-95/23.
19. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Noise and Air Quality Branch.** *Highway Traffic Noise Analysis and Abatement Policy and Guidance.* June, 1995.
20. **California Department of Transportation.** *Traffic Noise Analysis Protocol.* May 2011.
21. **Urban Crossroads, Inc.** *Bedford Marketplace Air Quality Impact Analysis.* November 2019.

13 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Bedford Marketplace Project. The information contained in this noise study report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 336-5979.

Bill Lawson, P.E., INCE
Principal
URBAN CROSSROADS, INC.
260 E. Baker Street, Suite 200
Costa Mesa, CA 92626
(949) 336-5979
blawson@urbanxroads.com



EDUCATION

Master of Science in Civil and Environmental Engineering
California Polytechnic State University, San Luis Obispo • December, 1993

Bachelor of Science in City and Regional Planning
California Polytechnic State University, San Luis Obispo • June, 1992

PROFESSIONAL REGISTRATIONS

PE – Registered Professional Traffic Engineer – TR 2537 • January, 2009
AICP – American Institute of Certified Planners – 013011 • June, 1997–January 1, 2012
PTP – Professional Transportation Planner • May, 2007 – May, 2013
INCE – Institute of Noise Control Engineering • March, 2004

PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
ITE – Institute of Transportation Engineers

PROFESSIONAL CERTIFICATIONS

Certified Acoustical Consultant – County of Orange • February, 2011
FHWA-NHI-142051 Highway Traffic Noise Certificate of Training • February, 2013

This page intentionally left blank

APPENDIX 3.1:

CITY OF CORONA MUNICIPAL CODE

This page intentionally left blank

CHAPTER 17.84
PERFORMANCE STANDARDS

Sections

17.84.010 Compliance required.

17.84.020 Fire and explosion hazards.

17.84.030 Radio-frequency energy or electrical disturbance.

17.84.040 Noise.

17.84.050 Vibration.

17.84.060 Dust, smoke, glare – Emission.

17.84.070 Glare.

17.84.080 Underground storage tanks.

17.84.010 Compliance required.

All uses established or placed into operation after the effective date of the ordinance codified in this title shall comply at all times hereafter with the following limitations or performance standards. All uses actually established and in operation on the effective date of the ordinance codified in this title shall be made to comply with the limitations or performance standards set forth in this chapter on or before January 3, 1967 and shall comply at all times thereafter.

(`78 Code, § 17.84.010.) (Ord. 2161 § 1 (part), 1993.)

17.84.020 Fire and explosion hazards.

The storage and handling of flammable liquids, liquified petroleum, gases and explosives shall comply with the state rules and regulations and ordinances of the city.

(`78 Code, § 17.84.020.) (Ord. 2161 § 1 (part), 1993.)

17.84.030 Radio-frequency energy or electrical disturbance.

Devices which radiate radio-frequency energy shall be so operated as not to cause interference with any activity carried on beyond the boundary line of the property upon which the device is located. Radio-frequency energy is electromagnetic energy at any frequency in the radio spectrum between ten kilocycles and three million megacycles.

(`78 Code, § 17.84.030.) (Ord. 2161 § 1 (part), 1993.)

17.84.040 Noise.

(A) **Purpose and intent**.

(1) The purpose of this section is to regulate noise and vibration in the interest of the public health, safety and general welfare. The city finds that certain noise levels and vibrations are detrimental to the public health, safety and general welfare and that the primary sources of noise in the city are freeways, highways, manufacturing uses, railroads, the airport and construction noise. The noise element of the General Plan contains the city's policies regarding noise and identifies noise contours for existing and future roadways and the Corona Municipal Airport, which are implemented by this chapter. The General Plan noise element shall govern all noise standards and policies.

(2) In order to control unnecessary, excessive and annoying noise and vibration in the city, it is hereby declared to be the policy of the city to prohibit such noise and vibration generated from or by all sources as specified in this chapter. It shall be the policy of the city to maintain quiet in those areas which exhibit low noise levels and to implement programs to reduce noise in those areas within the city where noise levels are above acceptable values. It is the intent of the city to minimize noise impacts to adjacent land uses pursuant to the standards identified herein.

(B) **Definitions**. Terms found in this chapter shall be defined as follows. Additional definitions are found in the noise element of the General Plan.

(1) "**A-weighted sound level**." The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighted filter network is designed to simulate the response of the human ear. The A-weighted sound level is expressed by the symbol dBA.

(2) "**Ambient noise**." The composite of noise from all existing sources near and far. The ambient noise level constitutes the normal or existing level of environmental noise at a given location, excluding any alleged offensive noise.

(3) "**Cumulative period**." An additive period of time composed of individual time segments which may be continuous or interrupted.

(4) "**Community noise equivalent level (CNEL)**." The average equivalent A-weighted sound level during a 24 hour day, obtained after addition of five decibels to sound levels between 7:00 p.m. and 10:00 p.m. and the addition of ten decibels to sound levels between 10:00 p.m. and 7:00 a.m.

(5) "**Decibel (dB)**." A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals.

(6) "**Impulsive noise**." A noise of short duration, usually less than one second, and of high intensity, with an abrupt onset and rapid decay.

(7) "**Noise study**." An acoustical analysis performed by a qualified noise engineer which determines the potential noise impacts of a roadway, land use or operation of equipment. The noise study will generate noise contours and recommend mitigation for noise impacts which exceed the city's noise standards.

(8) "**Sensitive land uses**." Those specific land uses which have associated human activities that may be subject to stress or significant interference from noise. Sensitive land uses include single family residential, multiple family residential, churches, hospitals and similar health care institutions, convalescent homes, libraries and school classroom areas.

(9) “**Simple tone noise**.” A noise characterized by a predominant frequency or frequencies so that other frequencies cannot be readily distinguished. When measured, a simple tone noise shall exist if the one-third octave band sound pressure levels in the band with the tone exceeds the arithmetic average of the sound pressure levels of the two continuous one-third octave bands as follows: 5 dB for frequencies of 500 hertz or above or by 15 dB for frequencies less than or equal to 125 hertz.

(10) “**Sound attenuation device**.” An enclosure, blanket, vault, box, wall, fence, panel, baffle, coating, material, silencer, or other appurtenance, mechanism, or device intended to reduce the noise level of mechanical equipment.

(C) **Noise standards**.

(1) The noise ordinance identifies two separate types of noise sources: transportation and stationary. Transportation related noise sources, such as freeways, airports and railroads, are identified within this chapter and are mainly for the planning stages of project development. The noise metrics used for this noise type is the Community Noise Equivalent Level (CNEL) which is a 24 hour time weighted average noise level. The other type of noise standard is for stationary noise sources, such as industrial or construction noise, that may be intrusive to a neighboring private property. The noise metric used for stationary sources is defined as noise levels that cannot be exceeded for certain percentages of time. The noise standards shown in Table 1 are for regulating the impact of stationary noise sources to a neighboring private property. Standards for transportation related noise are found in Table 2.

(2) Stationary noise sources.

TABLE 1
STATIONARY NOISE SOURCE STANDARDS

TYPE OF LAND USE	MAXIMUM ALLOWABLE NOISE LEVELS			
	Exterior Noise Level		Interior Noise Level	
	7 a.m. to 10 p.m.	10 p.m. to 7 a.m.	7 a.m. to 10 p.m.	10 p.m. to 7 a.m.
Single-, Double- and Multi- Family Residential	55 dBA	50 dBA	45 dBA	35 dBA
Other Sensitive Land Uses	55 dBA	50 dBA	45 dBA	35 dBA
Commercial Uses	65 dBA	60 dBA	Not applicable	Not applicable
Industrial, Manufacturing or Agricultural	75 dBA	70 dBA	Not applicable	Not applicable

(a) Each of the noise limits specified here shall be reduced by 5 dBA for impulse or simple tone noises; provided, however, that if the ambient noise level exceeds the resulting standards, the ambient shall be the standard.

(b) If the measurement location is on the boundary between two different zones, the lower noise level standard applicable to the zone shall apply.

(c) If the intruding noise is continuous and cannot be reasonably discontinued or stopped for a time period whereby the ambient noise level can be determined, the measured noise level

obtained while the source is in operation shall be compared directly to the allowable noise level standards as specified respective to the measurement location's designated land use and for the time of the day the noise level is measured. The reasonableness of temporarily discontinuing the noise generation by an intruding noise source shall be determined by the Code Enforcement Officer for the purpose of establishing the existing ambient noise level at the measurement location.

(d) Exterior noise:

1. It shall be unlawful for any person, entity or operation at any location within the incorporated area of the city to create any noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level when measured on any other property to exceed:

a. The noise standard for a cumulative period of more than 30 minutes in any hour;

b. The noise standard plus 5 dB for a cumulative period of more than 15 minutes in any hour;

c. The noise standard plus 10 dB for a cumulative period of more than five minutes in any hour;

d. The noise standard plus 15 dB for a cumulative period of more than one minute in any hour; or

e. The noise standard plus 20 dB for any period of time.

2. In the event the ambient noise level exceeds any of the first four noise limit categories above, the cumulative period applicable to the category shall be increased to reflect the ambient noise level. In the event the ambient noise level exceeds the fifth noise category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

(e) Interior noise. It shall be unlawful for any person at any location within the incorporated area of the city to create any noise or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such a person which causes the noise level when measured within any other residential dwelling unit or sensitive land use to exceed:

1. The noise standard for a cumulative period of more than five minutes in any hour;

2. The noise standard plus 5 dB for a cumulative period of more than one minute in any hour; or

3. The noise standard plus 10 dB, or the maximum measured ambient, for any period of time.

(3) Transportation noise sources.

TABLE 2
TRANSPORTATION NOISE SOURCE STANDARDS

TYPE OF LAND USE	**EXTERIOR NOISE LEVEL**	**INTERIOR NOISE LEVEL**
	(Private Outdoor Living Areas)	
Residential (Roadway)	65 CNEL	45 CNEL
Residential (Airport)	65 CNEL	45 CNEL
Other sensitive land uses	65 CNEL	45 CNEL

(Roadway)		
Other sensitive land uses (Airport)	65 CNEL	45 CNEL
Hotels/Motels (Roadway)	65 CNEL	45 CNEL
Hotels/Motels (Airport)	65 CNEL	45 CNEL

(a) **Roadway noise**. A noise study shall be performed prior to the construction of new master planned roads, roadway improvements, rail lines and/or prior to the construction of residential or sensitive land uses adjacent to existing or master planned roads or railways. The noise study shall identify the existing and future noise contours for the roadway and propose mitigation measures to reduce the noise impacts to a maximum of 65 dBA CNEL in the private outdoor living area of residences and to a maximum interior noise level of 45 dBA CNEL for residential and sensitive land uses, as shown in Table 2.

(b) **Airport noise**. Sensitive land uses, site-built homes and institutional uses are prohibited in airport noise contours above 65 dBA CNEL. All subdivisions within two miles of the Corona Municipal Airport or within the 65 dBA CNEL contour shall show and record an avigation easement for the benefit of the airport. The avigation easement shall provide notification to potential buyers and occupants of the presence of the easement and the potential for over flights and aircraft noise.

(D) **Special provisions**.

(1) **Mechanical equipment in residential zones.** Upon application for a building permit to install mechanical equipment, such as air conditioner and pool equipment, in a residential zone, the equipment shall be setback at least ten feet from an adjoining property line except where a five foot high block sound wall is maintained extending a distance of two feet on each side of such equipment and situated either between such equipment and the property line or on said property line. Exception: Mechanical equipment in residential zones shall be permitted closer than ten feet from an adjoining property line without a five foot high block sound wall when sound attenuation devices approved by the Building Official are installed. The noise level with sound attenuation devices installed shall comply with the limits and conditions specified in § 17.84.040(C)(2) when measured from any adjoining property. The approved sound attenuation devices shall be maintained and any approvals shall not be construed to permit violations of this code.

(2) **Construction noise**. Construction noise is prohibited between the hours of 8:00 p.m. to 7:00 a.m., Monday through Saturday and 6:00 p.m. to 10:00 a.m. on Sundays and federal holidays. Construction noise is defined as noise which is disturbing, excessive or offensive and constitutes a nuisance involving discomfort or annoyance to persons of normal sensitivity residing in the area, which is generated by the use of any tools, machinery or equipment used in connection with construction operations.

(3) **Noise devices**. In accordance with Chapter 9.24, no loudspeaker, bells, gongs, buzzers, mechanical equipment or other sounds, attention-attracting or communication device associated with any use adjacent to residential or sensitive land uses shall be discernible beyond the boundary line of the parcel, except fire protection devices, burglar alarms and church bells. Noise generated by these sources shall be enforced by the Police Department.

(4) **Noisy animals**. Noise generated by animals shall be regulated by the Police Department in accordance with Chapter 6.11.

(E) **Exemptions**. The following activities shall be exempt from these noise standards:

(1) Special events pursuant to an approved special use permit. Noise impacts shall be evaluated and conditioned as part of the special use permit;

(2) Filming pursuant to a film permit. Noise impacts shall be evaluated and conditioned as part of the film permit;

(3) Activities conducted on public parks, public playgrounds and public or private school grounds, including school athletic and entertainment events that are conducted under the sanction of the school or which a license or permit has been duly issued pursuant to any provision of city code;

(4) Noise sources associated with the maintenance of real property, provided the activities take place between the hours of 7:00 a.m. to 8:00 p.m. on any day except Sunday or between the hours of 9:00 a.m. to 8:00 p.m. on Sunday;

(5) Any activity too the extent regulation thereof has been preempted by state or federal law;

(6) Repairs to and replacement of mechanical equipment in residential zones installed by permit prior to May 20, 1993 shall be exempt from the requirements in division (D) of this section;

(7) Noise variances granted pursuant to subsection (H)(1) below;

(8) Short-term, non-continuous operations associated with government and public utility facilities that are necessary to maintain the delivery of services for the benefit of public health and safety.

(F) **Noise level measurements**. All noise shall be measured in accordance with the following standards. Measurements shall be taken of the ambient noise level and any alleged offensive noise. If the measurement location is on the boundary of two different noise zones, the lower noise level standard shall apply.

(1) **Sound level meter**. A sound level meter shall mean an instrument meeting the American National Standards Institute's S1.4 - 1971 for Type 1 sound level meters or an instrument and the associated recording and analyzing equipment which will provide equivalent data.

(2) **Ambient noise**. A measurement of the ambient noise level shall be taken according to the procedures in this chapter. If the ambient noise level exceeds the standard, the ambient level shall be the standard. If an alleged intruding noise source is continuous and cannot be reasonably discontinued or stopped for a time period whereby the ambient noise level can be determined, the measured noise level obtained while the alleged intruding noise source is in operation shall be compared directly to the applicable noise level standard.

(G) **Noise studies required**. As referenced in division (C) of this section, there are essentially two different types of noise sources that have been identified in Corona and each has its own noise metrics as well as its own required noise studies. The noise metrics used for transportation related noise sources is the CNEL which is a 24 hour time weighted average noise level. The noise metrics used for stationary sources are defined as noise levels that cannot be exceeded for certain percentages of time.

(1) **Predevelopment noise studies**. A predevelopment noise study is performed prior to development and is designed to project future noise levels and recommend mitigation measures to be implemented in project development. All noise studies shall be prepared by a registered noise engineer as approved by the city. Noise studies will be required for the construction of master planned roadways, for development adjacent to master planned roadways, when a noise generating use, such as a factory, is proposed in proximity to residential uses and when residential uses are proposed in proximity to an existing noise source. The need for a noise study will be determined at development plan review. Predevelopment noise studies shall project future noise levels based on proposed uses, traffic volumes and other relevant future conditions. Existing and projected noise shall be evaluated pursuant to the noise standards within this chapter and the noise element of the General Plan. Mitigation measures shall be proposed to bring noise levels into compliance with these standards. Mitigation measures may consist of

walls, berms, setbacks, landscaping, building materials, construction methods and any other means whereby noise can be reduced to the maximum amounts within this chapter.

(2) **Studies of existing stationary noise**. At times it will be necessary to study the noise generated by an existing source, either due to alleged violations of the noise ordinance or for monitoring purposes. These noise studies shall be prepared by a registered noise engineer as approved by the city in accordance with the standards in Table 1.

(H) **Noise variance**.

(1) The owner or operator of a noise or vibration source which violates any of the provisions of this chapter may file an application with the Community Development Department for a variance from the provisions thereof wherein said owner or operator shall set forth all actions taken to comply with the provisions, the reasons why immediate compliance cannot be achieved, a proposed method of achieving compliance and a proposed time schedule for its accomplishment. The application shall be accompanied by a fee as determined by City Council resolution. A separate application shall be filed for each noise source; provided, however, that several fixed sources on a single property may be combined into one application. An application for a variance shall remain subject to prosecution under the terms of this chapter until a variance is granted.

(2) The Board of Zoning Adjustment shall evaluate all applications for variance from the requirements of this chapter and may grant the variances with respect to time for compliance, subject to such terms, conditions and requirements as it may deem reasonable to achieve maximum compliance with the provisions of this chapter. The terms, conditions and requirements may include, but shall not be limited to, limitations on noise levels and operating hours. Each such variance shall set forth in detail the approved method of achieving maximum compliance and a time schedule for its accomplishment. In its determinations, the Board shall consider the following:

(a) The magnitude of the nuisance caused by the offensive noise;

(b) The uses of property within the area of impingement by the noise;

(c) The time factors related to study, design, financing and construction of remedial work;

(d) The economic factors related to age and useful life of the equipment;

(e) The general public interest, welfare and safety.

(3) Any variance granted by the Board shall be by resolution and shall be transmitted to the Code Enforcement Officer for enforcement. Any violation of the terms of the variance shall be unlawful and enforced pursuant to division (I) of this section.

(I) **Enforcement**.

(1) It shall be unlawful for any person at any location within the City of Corona to create any exterior noise or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level when measured according to this chapter to exceed the maximum allowable noise levels in Table 1 of § 17.84.040(C).

(2) No person shall interfere with, oppose or resist any authorized person charged with the enforcement of this chapter while such person is engaged in the performance of his or her duty.

(3) Any person violating any provision of this chapter shall be deemed guilty of a misdemeanor.

(4) The operation or maintenance of any device, instrument, vehicle or machinery in violation of any noise standard identified in this chapter is declared to be a public nuisance and may be

abated pursuant to the nuisance abatement procedure in Chapter 8.32 of this code.

(5) Pursuant to § 1.08.020(A) of this code, each person shall be deemed guilty of a separate offense for each and every day during any portion of which any violation of any provision of this chapter is committed, continued or permitted by such person and shall be punished accordingly.

(`78 Code, § 17.84.040.) (Ord. 3277 §§ 4, 5, 2018; Ord. 3188 § 3, 2015; Ord. 2372 § 2, 1999; Ord. 2161 § 1 (part), 1993.)

17.84.050 Vibration.

It shall be unlawful for any person to create, maintain or cause any ground vibration which is perceptible without instruments at any point on any affected property adjoining the property on which the vibration source is located. For the purposes of this section, the perception threshold shall be presumed to be more than 0.05 inches per second RMS vertical velocity.

(`78 Code, § 17.84.050.) (Ord. 2161 § 1 (part), 1993.)

17.84.060 Dust, smoke, glare – Emission.

The emission of dust, odor, smoke and glare shall conform to the standards established by the South Coast Air Quality Management District. Every use shall be so operated that it does not emit dust, odor, heat or glare in such quantities or degree as to be readily detectable on any boundary line of the lot on which the use is located.

(`78 Code, § 17.84.060.) (Ord. 2161 § 1 (part), 1993.)

17.84.070 Glare.

Glare from arc welding, acetylene torch cutting or similar processes shall be performed so as not to be seen from any point beyond the boundary line of the property. All areas of exterior lighting shall be designed to direct light downward with minimal spillover onto adjacent residences, sensitive land uses and open space.

(`78 Code, § 17.84.070.) (Ord. 2161 § 1 (part), 1993.)

17.84.080 Underground storage tanks.

Notwithstanding any provision of this code to the contrary, no underground tank for the storage of any type of chemical, gasoline, fuel, oil or other petroleum product shall be constructed within 500 feet of a well owned or operated by the City of Corona which supplies drinking water. Reconstruction or replacement of any underground storage tank, basin, or skimming pond existing within 500 feet of a well supplying drinking water as of the effective date of this chapter shall be subject to the review and approval of the General Manager of the Department of Water and Power, or his or her designee. The General Manager shall require:

(A) Testing of the tank site to ascertain whether contamination exists, and at what depth;

(B) That all testing and analysis be performed in accordance with California Environmental Protection Agency and U.S. Environment Protection Agency standards and methods by a qualified person, with laboratory certification of the test results; and

(C) That the removal or reconstruction of the existing tank and installation of any new tank be undertaken in strict compliance with all applicable federal, state, and local statutes, regulations, standards, and requirements.

(Ord. 2971 § 1 (part), 2009.)

This page intentionally left blank

APPENDIX 5.1:

STUDY AREA PHOTOS

This page intentionally left blank



L1
,



L1_E
33, 49' 14.440000", 117, 31' 24.540000"



L1_N
33, 49' 14.210000", 117, 31' 25.420000"



L1_S
33, 49' 14.330000", 117, 31' 25.720000"



L1_W
33, 49' 14.360000", 117, 31' 25.360000"



L2
33, 49' 10.790000", 117, 31' 22.320000"



L2_E
33, 49' 10.910000", 117, 31' 22.260000"



L2_N
33, 49' 10.800000", 117, 31' 22.180000"



L2_S
33, 49' 10.910000", 117, 31' 22.400000"



L2_W
33, 49' 10.760000", 117, 31' 22.320000"



L3
33, 48' 53.010000", 117, 31' 6.990000"

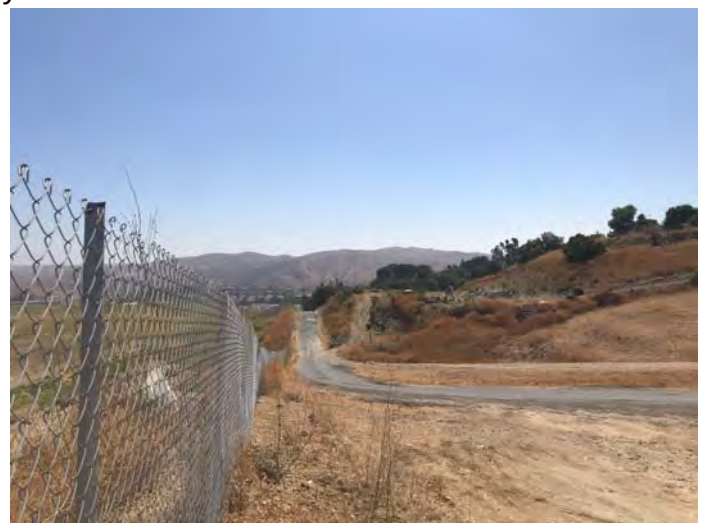


L3_E
33, 48' 53.070000", 117, 31' 6.990000"

JN: 12751 Study Area Photos



L3_N
33, 48' 53.010000", 117, 31' 6.990000"



L3_S
33, 48' 52.950000", 117, 31' 7.210000"



L3_W
33, 48' 53.060000", 117, 31' 7.540000"



L4
33, 48' 52.900000", 117, 30' 59.160000"



L4_E
33, 48' 53.030000", 117, 30' 58.940000"



L4_N
33, 48' 52.430000", 117, 30' 54.330000"

JN: 12751 Study Area Photos



L4_S
33, 48' 52.940000", 117, 30' 59.000000"



L4_W
33, 48' 52.950000", 117, 30' 59.130000"

APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

This page intentionally left blank

24-Hour Noise Level Measurement Summary

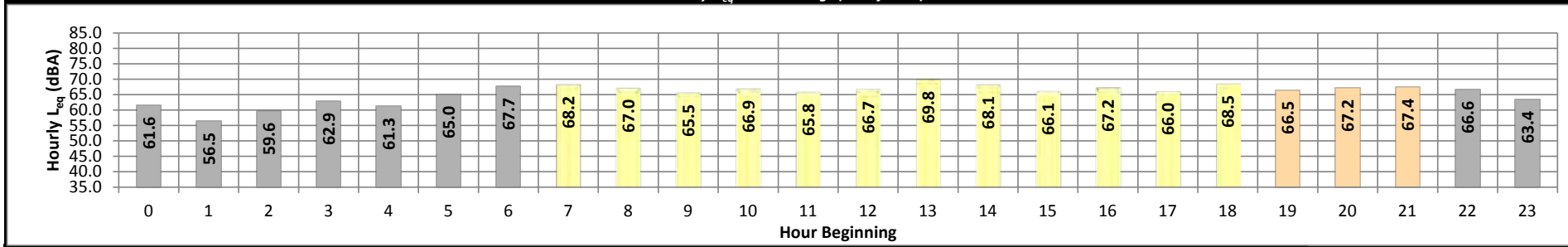
Date: Friday, August 02, 2019
Project: Bedford Marketplace

Location: L1 - Located northwest of Project site on Eagle Glen Parkway and Bedford Canyon Road near existing residential homes.

Meter: Piccolo I

JN: 12751
Analyst: P. Mara

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	61.6	84.8	42.1	73.0	70.0	67.0	64.0	56.0	50.0	45.0	44.0	43.0	61.6	10.0	71.6
	1	56.5	81.4	40.7	68.0	65.0	60.0	57.0	50.0	47.0	43.0	42.0	41.0	56.5	10.0	66.5
	2	59.6	83.5	43.7	69.0	67.0	66.0	65.0	52.0	49.0	46.0	45.0	44.0	59.6	10.0	69.6
	3	62.9	92.5	46.8	72.0	69.0	64.0	60.0	55.0	52.0	49.0	49.0	47.0	62.9	10.0	72.9
	4	61.3	77.2	49.9	72.0	70.0	67.0	66.0	58.0	55.0	52.0	52.0	51.0	61.3	10.0	71.3
	5	65.0	86.2	50.3	76.0	73.0	70.0	69.0	63.0	58.0	54.0	53.0	51.0	65.0	10.0	75.0
	6	67.7	89.1	52.3	78.0	76.0	72.0	71.0	67.0	61.0	57.0	56.0	55.0	67.7	10.0	77.7
Day	7	68.2	94.0	50.7	78.0	76.0	72.0	71.0	65.0	61.0	56.0	55.0	54.0	68.2	0.0	68.2
	8	67.0	86.9	50.1	78.0	75.0	71.0	70.0	65.0	61.0	55.0	54.0	52.0	67.0	0.0	67.0
	9	65.5	81.8	49.8	76.0	73.0	70.0	69.0	64.0	60.0	55.0	54.0	52.0	65.5	0.0	65.5
	10	66.9	89.1	50.3	77.0	75.0	71.0	69.0	65.0	60.0	55.0	54.0	52.0	66.9	0.0	66.9
	11	65.8	86.3	50.3	76.0	74.0	70.0	69.0	64.0	60.0	55.0	55.0	53.0	65.8	0.0	65.8
	12	66.7	88.9	49.8	78.0	75.0	71.0	69.0	65.0	61.0	55.0	54.0	52.0	66.7	0.0	66.7
	13	69.8	97.2	50.0	79.0	75.0	71.0	69.0	65.0	60.0	54.0	53.0	51.0	69.8	0.0	69.8
	14	68.1	91.4	50.8	78.0	75.0	71.0	69.0	65.0	60.0	55.0	55.0	53.0	68.1	0.0	68.1
	15	66.1	89.2	52.0	74.0	72.0	70.0	69.0	65.0	61.0	56.0	56.0	54.0	66.1	0.0	66.1
	16	67.2	89.2	53.6	79.0	75.0	71.0	69.0	64.0	61.0	57.0	56.0	55.0	67.2	0.0	67.2
	17	66.0	89.5	52.6	76.0	72.0	69.0	68.0	64.0	60.0	56.0	55.0	54.0	66.0	0.0	66.0
	18	68.5	95.5	51.3	74.0	72.0	69.0	68.0	64.0	60.0	55.0	54.0	52.0	68.5	0.0	68.5
Evening	19	66.5	91.0	47.4	77.0	74.0	70.0	68.0	64.0	59.0	54.0	53.0	49.0	66.5	5.0	71.5
	20	67.2	90.5	49.9	77.0	74.0	70.0	69.0	65.0	59.0	54.0	53.0	51.0	67.2	5.0	72.2
	21	67.4	92.5	48.3	77.0	74.0	71.0	70.0	66.0	60.0	53.0	51.0	50.0	67.4	5.0	72.4
Night	22	66.6	91.4	46.0	76.0	73.0	70.0	69.0	63.0	57.0	51.0	49.0	48.0	66.6	10.0	76.6
	23	63.4	86.6	45.0	74.0	72.0	69.0	67.0	60.0	54.0	48.0	47.0	46.0	63.4	10.0	73.4

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	65.5	81.8	49.8	74.0	72.0	69.0	68.0	64.0	60.0	54.0	53.0	51.0
	Max	69.8	97.2	53.6	79.0	76.0	72.0	71.0	65.0	61.0	57.0	56.0	55.0
Energy Average		67.3	Average:		76.9	74.1	70.5	69.1	64.6	60.4	55.3	54.6	52.8
Evening	Min	66.5	90.5	47.4	77.0	74.0	70.0	68.0	64.0	59.0	53.0	51.0	49.0
	Max	67.4	92.5	49.9	77.0	74.0	71.0	70.0	66.0	60.0	54.0	53.0	51.0
Energy Average		67.1	Average:		77.0	74.0	70.3	69.0	65.0	59.3	53.7	52.3	50.0
Night	Min	56.5	77.2	40.7	68.0	65.0	60.0	57.0	50.0	47.0	43.0	42.0	41.0
	Max	67.7	92.5	52.3	78.0	76.0	72.0	71.0	67.0	61.0	57.0	56.0	55.0
Energy Average		63.9	Average:		73.1	70.6	67.2	65.3	58.2	53.7	49.4	48.6	47.3

L_{eq} (dBA)

24-Hour	Daytime	Nighttime
66.3	67.3	63.9

24-Hour CNEL (dBA)

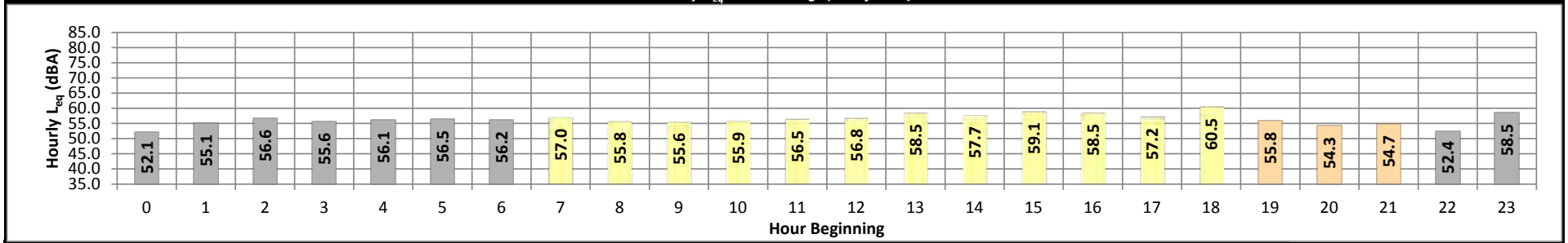
71.4

24-Hour Noise Level Measurement Summary

Date: Friday, August 02, 2019 *Location:* L2 - Located west of the Project site near existing vacant dirt lot. *Meter:* Piccolo I *JN:* 12751

Project: Bedford Marketplace *Analyst:* P. Mara

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	52.1	75.5	43.3	60.0	57.0	54.0	52.0	50.0	48.0	46.0	45.0	44.0	52.1	10.0	62.1
	1	55.1	62.1	44.9	57.0	57.0	56.0	56.0	55.0	55.0	53.0	52.0	46.0	55.1	10.0	65.1
	2	56.6	72.1	46.2	70.0	69.0	55.0	53.0	51.0	50.0	48.0	48.0	47.0	56.6	10.0	66.6
	3	55.6	67.0	49.2	59.0	58.0	57.0	57.0	56.0	55.0	52.0	51.0	50.0	55.6	10.0	65.6
	4	56.1	64.7	51.3	60.0	59.0	58.0	58.0	56.0	55.0	53.0	53.0	52.0	56.1	10.0	66.1
	5	56.5	63.9	51.4	61.0	60.0	59.0	59.0	57.0	55.0	53.0	52.0	52.0	56.5	10.0	66.5
	6	56.2	66.2	53.1	59.0	59.0	58.0	57.0	56.0	55.0	54.0	54.0	53.0	56.2	10.0	66.2
Day	7	57.0	70.7	49.1	66.0	64.0	62.0	60.0	56.0	54.0	52.0	51.0	50.0	57.0	0.0	57.0
	8	55.8	73.7	49.2	64.0	61.0	59.0	58.0	55.0	54.0	52.0	51.0	50.0	55.8	0.0	55.8
	9	55.6	68.2	48.0	63.0	61.0	59.0	58.0	55.0	54.0	51.0	50.0	49.0	55.6	0.0	55.6
	10	55.9	65.7	50.0	62.0	61.0	58.0	57.0	56.0	55.0	53.0	52.0	51.0	55.9	0.0	55.9
	11	56.5	70.8	52.0	62.0	61.0	60.0	58.0	56.0	55.0	53.0	53.0	53.0	56.5	0.0	56.5
	12	56.8	66.7	51.3	63.0	62.0	59.0	58.0	57.0	55.0	54.0	53.0	52.0	56.8	0.0	56.8
	13	58.5	81.8	52.2	64.0	62.0	59.0	58.0	57.0	55.0	54.0	53.0	53.0	58.5	0.0	58.5
	14	57.7	74.4	52.2	65.0	63.0	60.0	59.0	57.0	56.0	54.0	54.0	53.0	57.7	0.0	57.7
	15	59.1	78.4	52.5	68.0	65.0	62.0	60.0	58.0	56.0	55.0	54.0	53.0	59.1	0.0	59.1
	16	58.5	77.2	52.6	65.0	63.0	61.0	60.0	57.0	56.0	55.0	54.0	53.0	58.5	0.0	58.5
	17	57.2	77.9	51.5	63.0	61.0	59.0	58.0	56.0	55.0	54.0	53.0	53.0	57.2	0.0	57.2
	18	60.5	86.1	51.3	63.0	61.0	59.0	58.0	56.0	55.0	54.0	53.0	52.0	60.5	0.0	60.5
Evening	19	55.8	71.4	49.8	64.0	63.0	60.0	58.0	55.0	53.0	51.0	51.0	50.0	55.8	5.0	60.8
	20	54.3	72.3	48.7	61.0	58.0	57.0	56.0	54.0	52.0	51.0	50.0	49.0	54.3	5.0	59.3
	21	54.7	79.2	46.2	61.0	59.0	56.0	55.0	53.0	51.0	49.0	49.0	47.0	54.7	5.0	59.7
Night	22	52.4	71.1	44.2	62.0	59.0	56.0	54.0	52.0	49.0	47.0	46.0	45.0	52.4	10.0	62.4
	23	58.5	83.0	43.1	72.0	59.0	53.0	52.0	49.0	47.0	45.0	45.0	44.0	58.5	10.0	68.5

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	55.6	65.7	48.0	62.0	61.0	58.0	57.0	55.0	54.0	51.0	50.0	49.0
	Max	60.5	86.1	52.6	68.0	65.0	62.0	60.0	58.0	56.0	55.0	54.0	53.0
Energy Average		57.7	Average:		64.0	62.1	59.8	58.5	56.3	55.0	53.4	52.6	51.8
Evening	Min	54.3	71.4	46.2	61.0	58.0	56.0	55.0	53.0	51.0	49.0	49.0	47.0
	Max	55.8	79.2	49.8	64.0	63.0	60.0	58.0	55.0	53.0	51.0	51.0	50.0
Energy Average		55.0	Average:		62.0	60.0	57.7	56.3	54.0	52.0	50.3	50.0	48.7
Night	Min	52.1	62.1	43.1	57.0	57.0	53.0	52.0	49.0	47.0	45.0	45.0	44.0
	Max	58.5	83.0	53.1	72.0	69.0	59.0	59.0	57.0	55.0	54.0	54.0	53.0
Energy Average		55.8	Average:		62.2	59.7	56.2	55.3	53.6	52.1	50.1	49.6	48.1

L_{eq} (dBA)		
24-Hour	Daytime	Nighttime
56.8	57.3	55.8

24-Hour CNEL (dBA)

62.7

24-Hour Noise Level Measurement Summary

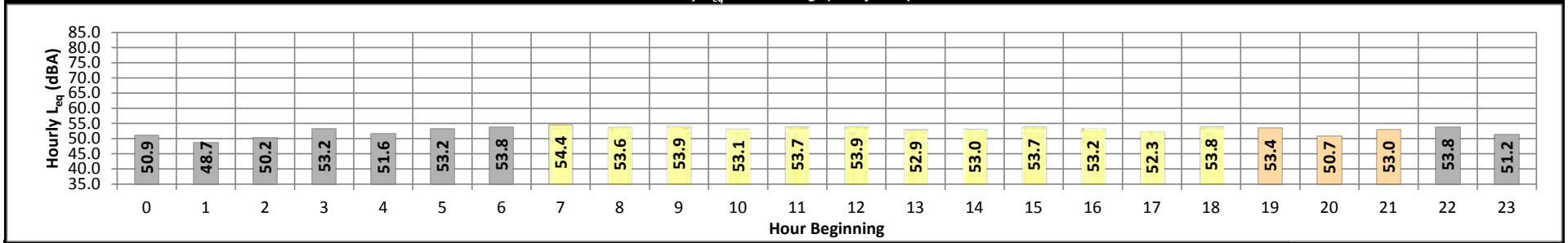
Date: Friday, August 02, 2019
Project: Bedford Marketplace

Location: L3 - Located South of the project site on Glen Road and North Weirick Road near vacant land and existing residential homes.

Meter: Piccolo I

JN: 12751
Analyst: P. Mara

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	50.9	66.2	45.0	56.0	55.0	54.0	53.0	51.0	50.0	47.0	47.0	46.0	50.9	10.0	60.9
	1	48.7	60.0	43.5	53.0	52.0	51.0	50.0	49.0	48.0	46.0	46.0	45.0	48.7	10.0	58.7
	2	50.2	58.4	45.2	54.0	53.0	52.0	52.0	50.0	49.0	47.0	47.0	46.0	50.2	10.0	60.2
	3	53.2	61.7	47.5	59.0	58.0	56.0	55.0	53.0	52.0	50.0	50.0	49.0	53.2	10.0	63.2
	4	51.6	63.5	47.1	56.0	55.0	54.0	53.0	52.0	51.0	49.0	48.0	48.0	51.6	10.0	61.6
	5	53.2	60.7	49.0	56.0	56.0	55.0	54.0	53.0	52.0	51.0	50.0	50.0	53.2	10.0	63.2
	6	53.8	69.8	49.9	57.0	56.0	55.0	55.0	54.0	53.0	52.0	51.0	50.0	53.8	10.0	63.8
Day	7	54.4	71.7	49.9	62.0	60.0	57.0	56.0	54.0	53.0	51.0	51.0	50.0	54.4	0.0	54.4
	8	53.6	63.4	48.6	60.0	58.0	56.0	55.0	53.0	52.0	51.0	50.0	50.0	53.6	0.0	53.6
	9	53.9	73.1	48.5	60.0	58.0	56.0	56.0	53.0	52.0	50.0	50.0	49.0	53.9	0.0	53.9
	10	53.1	62.2	48.9	57.0	56.0	55.0	54.0	53.0	52.0	51.0	50.0	50.0	53.1	0.0	53.1
	11	53.7	62.3	49.3	58.0	57.0	56.0	55.0	54.0	53.0	51.0	51.0	50.0	53.7	0.0	53.7
	12	53.9	63.5	49.3	59.0	58.0	56.0	56.0	54.0	53.0	51.0	51.0	50.0	53.9	0.0	53.9
	13	52.9	69.8	48.3	57.0	56.0	55.0	54.0	53.0	52.0	50.0	50.0	49.0	52.9	0.0	52.9
	14	53.0	69.9	47.5	62.0	58.0	55.0	54.0	52.0	51.0	49.0	49.0	48.0	53.0	0.0	53.0
	15	53.7	67.0	48.6	61.0	58.0	56.0	55.0	53.0	52.0	50.0	50.0	49.0	53.7	0.0	53.7
	16	53.2	62.9	48.4	58.0	57.0	56.0	55.0	53.0	52.0	50.0	50.0	49.0	53.2	0.0	53.2
	17	52.3	63.0	48.2	56.0	55.0	54.0	54.0	52.0	51.0	50.0	50.0	49.0	52.3	0.0	52.3
	18	53.8	63.3	50.4	59.0	57.0	56.0	55.0	54.0	53.0	51.0	51.0	51.0	53.8	0.0	53.8
Evening	19	53.4	64.9	48.6	60.0	58.0	56.0	55.0	53.0	52.0	50.0	50.0	49.0	53.4	5.0	58.4
	20	50.7	57.7	47.2	54.0	53.0	52.0	52.0	51.0	50.0	48.0	48.0	47.0	50.7	5.0	55.7
	21	53.0	65.8	47.0	58.0	57.0	55.0	55.0	53.0	52.0	50.0	49.0	48.0	53.0	5.0	58.0
Night	22	53.8	70.4	48.0	61.0	59.0	56.0	55.0	53.0	52.0	50.0	50.0	49.0	53.8	10.0	63.8
	23	51.2	64.5	46.5	56.0	55.0	54.0	53.0	51.0	50.0	48.0	48.0	47.0	51.2	10.0	61.2

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	52.3	62.2	47.5	56.0	55.0	54.0	54.0	52.0	51.0	49.0	49.0	48.0
	Max	54.4	73.1	50.4	62.0	60.0	57.0	56.0	54.0	53.0	51.0	51.0	51.0
Energy Average		53.5	Average:		59.1	57.3	55.7	54.9	53.2	52.2	50.4	50.3	49.5
Evening	Min	50.7	57.7	47.0	54.0	53.0	52.0	52.0	51.0	50.0	48.0	48.0	47.0
	Max	53.4	65.8	48.6	60.0	58.0	56.0	55.0	53.0	52.0	50.0	50.0	49.0
Energy Average		52.5	Average:		57.3	56.0	54.3	54.0	52.3	51.3	49.3	49.0	48.0
Night	Min	48.7	58.4	43.5	53.0	52.0	51.0	50.0	49.0	48.0	46.0	46.0	45.0
	Max	53.8	70.4	49.9	61.0	59.0	56.0	55.0	54.0	53.0	52.0	51.0	50.0
Energy Average		52.1	Average:		56.4	55.4	54.1	53.3	51.8	50.8	48.9	48.6	47.8

L_{eq} (dBA)

24-Hour	Daytime	Nighttime
52.9	53.3	52.1

24-Hour CNEL (dBA)

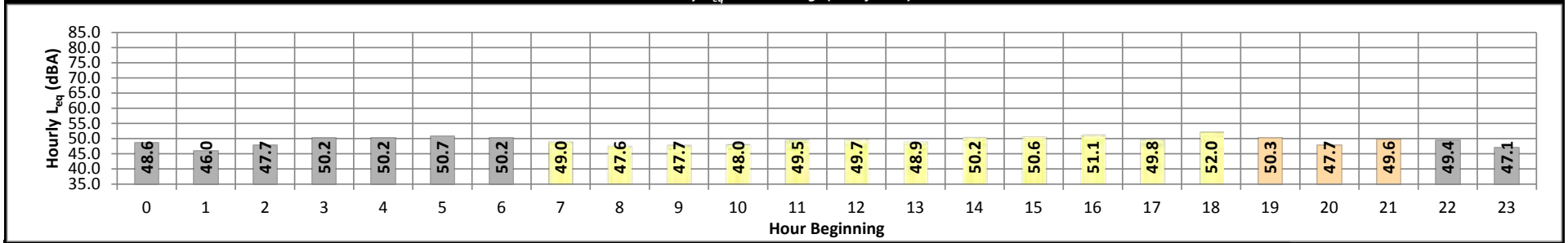
59.0

24-Hour Noise Level Measurement Summary

Date: Friday, August 02, 2019 *Location:* L4 -Located southeast of the Project site on Glen Road near existing residential homes and vacant lot. *Meter:* Piccolo I *JN:* 12751

Project: Bedford Marketplace *Analyst:* P. Mara

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	48.6	55.6	43.2	53.0	53.0	52.0	51.0	49.0	47.0	45.0	45.0	44.0	48.6	10.0	58.6
	1	46.0	55.6	41.9	50.0	49.0	48.0	48.0	46.0	45.0	43.0	43.0	42.0	46.0	10.0	56.0
	2	47.7	57.6	43.5	51.0	51.0	50.0	49.0	48.0	47.0	45.0	45.0	44.0	47.7	10.0	57.7
	3	50.2	63.4	45.5	54.0	53.0	52.0	52.0	50.0	49.0	47.0	47.0	46.0	50.2	10.0	60.2
	4	50.2	65.0	44.8	55.0	54.0	53.0	53.0	50.0	48.0	47.0	46.0	45.0	50.2	10.0	60.2
	5	50.7	68.9	46.8	54.0	53.0	52.0	52.0	51.0	50.0	48.0	48.0	47.0	50.7	10.0	60.7
	6	50.2	63.0	43.7	55.0	53.0	52.0	52.0	51.0	49.0	46.0	46.0	44.0	50.2	10.0	60.2
Day	7	49.0	65.2	41.9	58.0	56.0	53.0	51.0	48.0	46.0	43.0	43.0	42.0	49.0	0.0	49.0
	8	47.6	64.0	41.8	58.0	55.0	50.0	49.0	46.0	44.0	43.0	43.0	42.0	47.6	0.0	47.6
	9	47.7	68.4	40.7	57.0	55.0	52.0	50.0	46.0	44.0	42.0	42.0	42.0	47.7	0.0	47.7
	10	48.0	62.4	43.0	55.0	52.0	50.0	49.0	48.0	47.0	45.0	45.0	43.0	48.0	0.0	48.0
	11	49.5	64.5	44.4	57.0	55.0	53.0	52.0	49.0	47.0	46.0	45.0	45.0	49.5	0.0	49.5
	12	49.7	66.3	44.3	57.0	56.0	53.0	51.0	49.0	48.0	46.0	45.0	45.0	49.7	0.0	49.7
	13	48.9	66.5	44.2	54.0	52.0	51.0	50.0	49.0	48.0	46.0	45.0	45.0	48.9	0.0	48.9
	14	50.2	69.7	44.3	59.0	56.0	52.0	51.0	49.0	48.0	46.0	45.0	45.0	50.2	0.0	50.2
	15	50.6	64.2	44.9	58.0	55.0	53.0	52.0	50.0	49.0	47.0	47.0	46.0	50.6	0.0	50.6
	16	51.1	64.4	46.6	57.0	56.0	54.0	53.0	51.0	50.0	48.0	48.0	47.0	51.1	0.0	51.1
	17	49.8	62.2	45.6	54.0	53.0	51.0	51.0	50.0	49.0	48.0	47.0	47.0	49.8	0.0	49.8
	18	52.0	72.1	47.4	58.0	56.0	54.0	53.0	51.0	50.0	49.0	48.0	48.0	52.0	0.0	52.0
Evening	19	50.3	62.8	45.8	57.0	55.0	53.0	52.0	50.0	49.0	47.0	47.0	46.0	50.3	5.0	55.3
	20	47.7	58.4	42.1	52.0	51.0	50.0	49.0	48.0	47.0	45.0	44.0	43.0	47.7	5.0	52.7
	21	49.6	58.4	43.5	53.0	52.0	51.0	51.0	50.0	49.0	47.0	46.0	45.0	49.6	5.0	54.6
Night	22	49.4	60.3	45.3	53.0	52.0	51.0	51.0	50.0	48.0	47.0	46.0	46.0	49.4	10.0	59.4
	23	47.1	53.6	41.1	51.0	51.0	50.0	49.0	47.0	46.0	44.0	44.0	43.0	47.1	10.0	57.1

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	47.6	62.2	40.7	54.0	52.0	50.0	49.0	46.0	44.0	42.0	42.0	42.0
	Max	52.0	72.1	47.4	59.0	56.0	54.0	53.0	51.0	50.0	49.0	48.0	48.0
Energy Average		49.7	Average:		56.8	54.8	52.2	51.0	48.8	47.5	45.8	45.3	44.8
Evening	Min	47.7	58.4	42.1	52.0	51.0	50.0	49.0	48.0	47.0	45.0	44.0	43.0
	Max	50.3	62.8	45.8	57.0	55.0	53.0	52.0	50.0	49.0	47.0	47.0	46.0
Energy Average		49.3	Average:		54.0	52.7	51.3	50.7	49.3	48.3	46.3	45.7	44.7
Night	Min	46.0	53.6	41.1	50.0	49.0	48.0	48.0	46.0	45.0	43.0	43.0	42.0
	Max	50.7	68.9	46.8	55.0	54.0	53.0	53.0	51.0	50.0	48.0	48.0	47.0
Energy Average		49.2	Average:		52.9	52.1	51.1	50.8	49.1	47.7	45.8	45.6	44.6

L_{eq} (dBA)

24-Hour	*Daytime*	*Nighttime*
49.5	**49.6**	**49.2**

24-Hour CNEL (dBA)

55.9

APPENDIX 7.1:

OFF-SITE TRAFFIC NOISE LEVEL CONTOURS

This page intentionally left blank

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Masters Dr.
Road Segment: n/o California Av.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,452 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	445 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-4.95	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-22.19	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-26.15	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.8	60.9	59.2	53.1	61.7	62.3
Medium Trucks:	56.9	55.3	49.0	47.4	55.9	56.1
Heavy Trucks:	58.2	56.7	47.7	49.0	57.3	57.4
Vehicle Noise:	64.9	63.1	59.8	55.3	63.8	64.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	13	28	61	132
CNEL:	14	30	66	141

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Masters Dr.
Road Segment: s/o California Av.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,364 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	936 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.72	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-18.96	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-22.92	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.1	64.2	62.4	56.3	65.0	65.6
Medium Trucks:	60.1	58.6	52.2	50.7	59.1	59.4
Heavy Trucks:	61.4	60.0	50.9	52.2	60.5	60.7
Vehicle Noise:	68.1	66.4	63.1	58.5	67.1	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	22	47	101	217
CNEL:	23	50	108	232

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Masters Dr.
Road Segment: n/o Bennet Av.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	600 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-3.66	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-20.90	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-24.85	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.1	62.2	60.5	54.4	63.0	63.6
Medium Trucks:	58.1	56.6	50.3	48.7	57.2	57.4
Heavy Trucks:	59.5	58.0	49.0	50.3	58.6	58.7
Vehicle Noise:	66.2	64.4	61.1	56.6	65.1	65.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	35	75	161
CNEL:	17	37	80	172

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Masters Dr.
Road Segment: n/o Eagle Glen Pkwy.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,466 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	547 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-4.06	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-21.30	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-25.26	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.7	61.8	60.1	54.0	62.6	63.2
Medium Trucks:	57.7	56.2	49.9	48.3	56.8	57.0
Heavy Trucks:	59.1	57.6	48.6	49.9	58.2	58.3
Vehicle Noise:	65.8	64.0	60.7	56.2	64.7	65.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	33	70	151
CNEL:	16	35	75	162

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bedford Cyn. Rd.
Road Segment: s/o El Cerrito Rd.

Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	780 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	38.0 feet
Centerline Dist. to Observer:	38.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	36.401
Medium Trucks:	36.157
Heavy Trucks:	36.181

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.52	1.96	-1.20	-4.57	0.000	0.000
Medium Trucks:	77.72	-19.76	2.01	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-23.71	2.00	-1.20	-5.59	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.8	62.9	61.1	55.0	63.7	64.3
Medium Trucks:	58.8	57.3	50.9	49.4	57.8	58.0
Heavy Trucks:	60.1	58.7	49.6	50.9	59.2	59.4
Vehicle Noise:	66.8	65.0	61.8	57.2	65.8	66.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	20	43	92	198
CNEL:	21	46	98	212

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bedford Cyn. Rd.
Road Segment: n/o Georgetown Dr.

Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,926 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	893 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	38.0 feet
Centerline Dist. to Observer:	38.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	36.401
Medium Trucks:	36.157
Heavy Trucks:	36.181

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.93	1.96	-1.20	-4.57	0.000	0.000
Medium Trucks:	77.72	-19.17	2.01	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-23.13	2.00	-1.20	-5.59	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.3	63.4	61.7	55.6	64.2	64.9
Medium Trucks:	59.4	57.8	51.5	49.9	58.4	58.6
Heavy Trucks:	60.7	59.2	50.2	51.5	59.8	59.9
Vehicle Noise:	67.4	65.6	62.3	57.8	66.3	66.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	22	47	101	217
CNEL:	23	50	108	232

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Bedford Cyn. Rd.
Road Segment: n/o Eagle Glen Pkwy.

Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,088 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	809 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	38.0 feet
Centerline Dist. to Observer:	38.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	36.401
Medium Trucks:	36.157
Heavy Trucks:	36.181

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.36	1.96	-1.20	-4.57	0.000	0.000
Medium Trucks:	77.72	-19.60	2.01	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-23.56	2.00	-1.20	-5.59	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.9	63.0	61.2	55.2	63.8	64.4
Medium Trucks:	58.9	57.4	51.1	49.5	58.0	58.2
Heavy Trucks:	60.2	58.8	49.8	51.0	59.4	59.5
Vehicle Noise:	66.9	65.2	61.9	57.4	65.9	66.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	20	44	94	203
CNEL:	22	47	101	217

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Temescal Cyn. Rd.
Road Segment: n/o Cajalco Rd.

Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,599 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,560 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	51 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	53.0 feet
Centerline Dist. to Observer:	53.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.731
Medium Trucks:	46.541
Heavy Trucks:	46.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.02	0.34	-1.20	-4.66	0.000	0.000
Medium Trucks:	79.45	-17.26	0.36	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-21.21	0.36	-1.20	-5.40	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.6	65.7	63.9	57.9	66.5	67.1
Medium Trucks:	61.4	59.8	53.5	51.9	60.4	60.6
Heavy Trucks:	62.2	60.8	51.7	53.0	61.3	61.5
Vehicle Noise:	69.4	67.7	64.5	59.9	68.4	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	41	89	192	414
CNEL:	44	96	206	444

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Temescal Cyn. Rd.
Road Segment: s/o Cajalco Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,684 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,168 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	51 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	53.0 feet
Centerline Dist. to Observer:	53.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.731
Medium Trucks:	46.541
Heavy Trucks:	46.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.41	0.34	-1.20	-4.66	0.000	0.000
Medium Trucks:	79.45	-15.83	0.36	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-19.78	0.36	-1.20	-5.40	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.0	67.1	65.3	59.3	67.9	68.5
Medium Trucks:	62.8	61.3	54.9	53.4	61.8	62.1
Heavy Trucks:	63.6	62.2	53.2	54.4	62.8	62.9
Vehicle Noise:	70.9	69.1	66.0	61.3	69.8	70.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	52	111	239	516
CNEL:	55	119	257	553

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: California Av.
Road Segment: w/o Masters Dr.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,244 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	524 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-4.24	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-21.48	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-25.44	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.5	61.6	59.9	53.8	62.4	63.1
Medium Trucks:	57.6	56.1	49.7	48.1	56.6	56.8
Heavy Trucks:	58.9	57.5	48.4	49.7	58.0	58.2
Vehicle Noise:	65.6	63.8	60.6	56.0	64.5	65.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	32	68	147
CNEL:	16	34	73	158

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: California Av.
Road Segment: e/o Masters Dr.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	700 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.99	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-20.23	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-24.18	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.8	62.9	61.1	55.1	63.7	64.3
Medium Trucks:	58.8	57.3	50.9	49.4	57.9	58.1
Heavy Trucks:	60.1	58.7	49.7	50.9	59.3	59.4
Vehicle Noise:	66.8	65.1	61.8	57.3	65.8	66.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	18	38	83	179
CNEL:	19	41	89	191

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: El Cerrito Rd.
Road Segment: w/o Bedford Cyn. Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,043 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,404 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.37	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-14.87	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-18.82	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.0	67.1	65.3	59.2	67.9	68.5
Medium Trucks:	63.0	61.5	55.1	53.5	62.0	62.2
Heavy Trucks:	64.3	62.9	53.8	55.1	63.4	63.6
Vehicle Noise:	71.0	69.2	66.0	61.4	70.0	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	44	94	203	437
CNEL:	47	101	217	468

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing | Project Name: Bedford Marketplace
Road Name: El Cerrito Rd. | Job Number: 12751
Road Segment: e/o Bedford Cyn. Rd.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,534 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,553 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.63	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-14.61	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-18.56	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.2	67.3	65.6	59.5	68.1	68.7
Medium Trucks:	63.2	61.7	55.4	53.8	62.3	62.5
Heavy Trucks:	64.5	63.1	54.1	55.3	63.7	63.8
Vehicle Noise:	71.2	69.5	66.2	61.7	70.2	70.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	45	98	211	455
CNEL:	49	105	226	487

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing | Project Name: Bedford Marketplace
Road Name: El Cerrito Rd. | Job Number: 12751
Road Segment: e/o I-15 SB Ramps

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,374 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,637 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.70	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-16.54	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-20.49	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.3	65.4	63.6	57.6	66.2	66.8
Medium Trucks:	61.3	59.8	53.4	51.9	60.3	60.6
Heavy Trucks:	62.6	61.2	52.2	53.4	61.8	61.9
Vehicle Noise:	69.3	67.6	64.3	59.8	68.3	68.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	34	73	157	338
CNEL:	36	78	168	362

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing | Project Name: Bedford Marketplace
Road Name: El Cerrito Rd. | Job Number: 12751
Road Segment: e/o I-15 NB Ramps

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,519 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	952 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.65	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-18.89	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-22.85	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.9	63.0	61.3	55.2	63.8	64.4
Medium Trucks:	58.9	57.4	51.1	49.5	58.0	58.2
Heavy Trucks:	60.3	58.8	49.8	51.0	59.4	59.5
Vehicle Noise:	67.0	65.2	61.9	57.4	65.9	66.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	24	51	109	236
CNEL:	25	54	117	252

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing | Project Name: Bedford Marketplace
Road Name: Eagle Glen Pkwy. | Job Number: 12751
Road Segment: e/o Masters Dr.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,944 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,294 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-0.32	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-17.56	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-21.51	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.3	64.4	62.6	56.5	65.2	65.8
Medium Trucks:	60.3	58.8	52.4	50.9	59.3	59.5
Heavy Trucks:	61.6	60.2	51.1	52.4	60.7	60.9
Vehicle Noise:	68.3	66.6	63.3	58.7	67.3	67.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	29	62	134	289
CNEL:	31	67	144	310

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Eagle Glen Pkwy.
Road Segment: e/o Bedford Cyn. Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,480 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,848 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	0.72	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-16.52	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-20.48	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.5	65.6	63.8	57.8	66.4	67.0
Medium Trucks:	61.3	59.8	53.4	51.9	60.3	60.5
Heavy Trucks:	62.1	60.7	51.7	52.9	61.3	61.4
Vehicle Noise:	69.3	67.6	64.4	59.8	68.3	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	50	108	233	501
CNEL:	54	116	250	538

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Cajalco Rd.
Road Segment: e/o I-15 SB Ramps
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,220 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,022 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.11	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-16.13	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-20.09	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.9	66.0	64.2	58.2	66.8	67.4
Medium Trucks:	61.7	60.2	53.8	52.2	60.7	60.9
Heavy Trucks:	62.5	61.1	52.0	53.3	61.7	61.8
Vehicle Noise:	69.7	68.0	64.8	60.2	68.7	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	53	115	247	532
CNEL:	57	123	265	571

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Cajalco Rd.
Road Segment: e/o I-15 NB Ramps
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	30,314 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,031 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	2.87	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-14.37	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-18.33	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.6	67.7	66.0	59.9	68.5	69.2
Medium Trucks:	63.4	61.9	55.5	54.0	62.5	62.7
Heavy Trucks:	64.3	62.8	53.8	55.1	63.4	63.5
Vehicle Noise:	71.5	69.7	66.6	61.9	70.5	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	70	150	324	698
CNEL:	75	161	347	748

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Cajalco Rd.
Road Segment: e/o Grand Oaks
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,024 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,802 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	0.61	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-16.63	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-20.59	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.4	65.5	63.7	57.7	66.3	66.9
Medium Trucks:	61.2	59.7	53.3	51.7	60.2	60.4
Heavy Trucks:	62.0	60.6	51.5	52.8	61.2	61.3
Vehicle Noise:	69.2	67.5	64.3	59.7	68.2	68.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	106	229	493
CNEL:	53	114	246	529

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Cajalco Rd.
Road Segment: e/o Temescal Cyn. Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,076 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,008 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.08	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-16.16	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-20.12	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.9	66.0	64.2	58.1	66.8	67.4
Medium Trucks:	61.6	60.1	53.8	52.2	60.7	60.9
Heavy Trucks:	62.5	61.1	52.0	53.3	61.6	61.7
Vehicle Noise:	69.7	68.0	64.8	60.1	68.7	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	53	114	246	530
CNEL:	57	122	264	568

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Masters Dr.
Road Segment: n/o California Av.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,682 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	468 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-4.74	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-21.97	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-25.93	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.1	61.2	59.4	53.3	62.0	62.6
Medium Trucks:	57.1	55.6	49.2	47.7	56.1	56.3
Heavy Trucks:	58.4	57.0	47.9	49.2	57.5	57.7
Vehicle Noise:	65.1	63.3	60.1	55.5	64.1	64.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	14	29	63	137
CNEL:	15	31	68	146

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Masters Dr.
Road Segment: s/o California Av.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,364 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	936 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.72	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-18.96	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-22.92	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.1	64.2	62.4	56.3	65.0	65.6
Medium Trucks:	60.1	58.6	52.2	50.7	59.1	59.4
Heavy Trucks:	61.4	60.0	50.9	52.2	60.5	60.7
Vehicle Noise:	68.1	66.4	63.1	58.5	67.1	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	22	47	101	217
CNEL:	23	50	108	232

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Masters Dr.
Road Segment: n/o Bennet Av.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,084 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	708 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.94	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-20.18	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-24.13	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.9	63.0	61.2	55.1	63.8	64.4
Medium Trucks:	58.9	57.4	51.0	49.5	57.9	58.1
Heavy Trucks:	60.2	58.8	49.7	51.0	59.3	59.5
Vehicle Noise:	66.9	65.1	61.9	57.3	65.9	66.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	18	39	84	180
CNEL:	19	42	89	193

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Masters Dr.
Road Segment: n/o Eagle Glen Pkwy.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,648 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	665 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-3.21	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-20.45	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-24.41	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.6	62.7	60.9	54.9	63.5	64.1
Medium Trucks:	58.6	57.1	50.7	49.2	57.6	57.9
Heavy Trucks:	59.9	58.5	49.5	50.7	59.1	59.2
Vehicle Noise:	66.6	64.9	61.6	57.0	65.6	66.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	37	80	172
CNEL:	18	40	86	185

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Bedford Cyn. Rd.
Road Segment: s/o El Cerrito Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,490 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	949 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	38.0 feet
Centerline Dist. to Observer:	38.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	36.401
Medium Trucks:	36.157
Heavy Trucks:	36.181

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.67	1.96	-1.20	-4.57	0.000	0.000
Medium Trucks:	77.72	-18.91	2.01	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-22.86	2.00	-1.20	-5.59	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.6	63.7	61.9	55.9	64.5	65.1
Medium Trucks:	59.6	58.1	51.7	50.2	58.7	58.9
Heavy Trucks:	60.9	59.5	50.5	51.7	60.1	60.2
Vehicle Noise:	67.6	65.9	62.6	58.1	66.6	67.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	23	49	105	226
CNEL:	24	52	112	242

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Bedford Cyn. Rd.
Road Segment: n/o Georgetown Dr.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,926 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	893 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	38.0 feet
Centerline Dist. to Observer:	38.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	36.401
Medium Trucks:	36.157
Heavy Trucks:	36.181

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.93	1.96	-1.20	-4.57	0.000	0.000
Medium Trucks:	77.72	-19.17	2.01	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-23.13	2.00	-1.20	-5.59	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.3	63.4	61.7	55.6	64.2	64.9
Medium Trucks:	59.4	57.8	51.5	49.9	58.4	58.6
Heavy Trucks:	60.7	59.2	50.2	51.5	59.8	59.9
Vehicle Noise:	67.4	65.6	62.3	57.8	66.3	66.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	22	47	101	217
CNEL:	23	50	108	232

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Bedford Cyn. Rd.
Road Segment: n/o Eagle Glen Pkwy.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,876 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	988 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	38.0 feet
Centerline Dist. to Observer:	38.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	36.401
Medium Trucks:	36.157
Heavy Trucks:	36.181

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.49	1.96	-1.20	-4.57	0.000	0.000
Medium Trucks:	77.72	-18.73	2.01	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-22.69	2.00	-1.20	-5.59	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.8	63.9	62.1	56.1	64.7	65.3
Medium Trucks:	59.8	58.3	51.9	50.4	58.8	59.1
Heavy Trucks:	61.1	59.7	50.7	51.9	60.3	60.4
Vehicle Noise:	67.8	66.1	62.8	58.2	66.8	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	23	50	108	232
CNEL:	25	53	115	248

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Temescal Cyn. Rd.
Road Segment: n/o Cajalco Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,883 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,588 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	51 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	53.0 feet
Centerline Dist. to Observer:	53.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.731
Medium Trucks:	46.541
Heavy Trucks:	46.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	0.06	0.34	-1.20	-4.66	0.000	0.000
Medium Trucks:	79.45	-17.18	0.36	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-21.14	0.36	-1.20	-5.40	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.7	65.8	64.0	57.9	66.6	67.2
Medium Trucks:	61.4	59.9	53.6	52.0	60.5	60.7
Heavy Trucks:	62.3	60.9	51.8	53.1	61.4	61.6
Vehicle Noise:	69.5	67.8	64.6	59.9	68.5	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	42	90	195	419
CNEL:	45	97	209	450

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Temescal Cyn. Rd.
Road Segment: s/o Cajalco Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,242 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,224 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	51 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	53.0 feet
Centerline Dist. to Observer:	53.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.731
Medium Trucks:	46.541
Heavy Trucks:	46.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.52	0.34	-1.20	-4.66	0.000	0.000
Medium Trucks:	79.45	-15.72	0.36	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-19.67	0.36	-1.20	-5.40	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.1	67.2	65.5	59.4	68.0	68.6
Medium Trucks:	62.9	61.4	55.0	53.5	61.9	62.2
Heavy Trucks:	63.7	62.3	53.3	54.5	62.9	63.0
Vehicle Noise:	71.0	69.2	66.1	61.4	69.9	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	52	113	244	525
CNEL:	56	121	261	563

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: California Av.
Road Segment: w/o Masters Dr.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,480 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	548 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-4.05	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-21.29	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-25.25	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.7	61.8	60.1	54.0	62.6	63.2
Medium Trucks:	57.8	56.2	49.9	48.3	56.8	57.0
Heavy Trucks:	59.1	57.7	48.6	49.9	58.2	58.3
Vehicle Noise:	65.8	64.0	60.7	56.2	64.7	65.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	33	70	152
CNEL:	16	35	75	162

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: California Av.
Road Segment: e/o Masters Dr.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,320 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	732 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.79	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-20.03	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-23.99	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.0	63.1	61.3	55.3	63.9	64.5
Medium Trucks:	59.0	57.5	51.1	49.6	58.1	58.3
Heavy Trucks:	60.3	58.9	49.9	51.1	59.5	59.6
Vehicle Noise:	67.0	65.3	62.0	57.5	66.0	66.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	18	40	85	184
CNEL:	20	42	91	197

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: El Cerrito Rd.
Road Segment: w/o Bedford Cyn. Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,127 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,513 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.56	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-14.68	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-18.63	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.1	67.3	65.5	59.4	68.1	68.7
Medium Trucks:	63.2	61.6	55.3	53.7	62.2	62.4
Heavy Trucks:	64.5	63.0	54.0	55.3	63.6	63.7
Vehicle Noise:	71.2	69.4	66.2	61.6	70.1	70.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	45	97	209	450
CNEL:	48	104	224	482

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: El Cerrito Rd.
Road Segment: e/o Bedford Cyn. Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,140 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,614 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.73	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-14.50	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-18.46	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.3	67.4	65.7	59.6	68.2	68.8
Medium Trucks:	63.3	61.8	55.5	53.9	62.4	62.6
Heavy Trucks:	64.6	63.2	54.2	55.4	63.8	63.9
Vehicle Noise:	71.3	69.6	66.3	61.8	70.3	70.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	46	100	214	462
CNEL:	49	107	230	495

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: El Cerrito Rd.
Road Segment: e/o I-15 SB Ramps
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,980 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,698 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.86	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-16.38	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-20.33	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.4	65.5	63.8	57.7	66.3	67.0
Medium Trucks:	61.4	59.9	53.6	52.0	60.5	60.7
Heavy Trucks:	62.8	61.3	52.3	53.6	61.9	62.0
Vehicle Noise:	69.5	67.7	64.5	59.9	68.4	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	35	75	161	347
CNEL:	37	80	172	371

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: El Cerrito Rd.
Road Segment: e/o I-15 NB Ramps
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,125 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,013 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.39	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-18.62	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-22.58	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.2	63.3	61.5	55.5	64.1	64.7
Medium Trucks:	59.2	57.7	51.3	49.8	58.2	58.5
Heavy Trucks:	60.5	59.1	50.1	51.3	59.7	59.8
Vehicle Noise:	67.2	65.5	62.2	57.7	66.2	66.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	25	53	114	246
CNEL:	26	57	122	263

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Eagle Glen Pkwy.
Road Segment: e/o Masters Dr.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,794 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,979 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	1.53	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-15.71	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-19.67	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	66.2	64.4	58.4	67.0	67.6
Medium Trucks:	62.1	60.6	54.2	52.7	61.2	61.4
Heavy Trucks:	63.4	62.0	53.0	54.2	62.6	62.7
Vehicle Noise:	70.1	68.4	65.1	60.6	69.1	69.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	38	83	178	384
CNEL:	41	89	191	411

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Eagle Glen Pkwy.
Road Segment: e/o Bedford Cyn. Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	33,686 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,369 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	3.32	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-13.91	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-17.87	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.1	68.2	66.4	60.4	69.0	69.6
Medium Trucks:	63.9	62.4	56.0	54.5	62.9	63.2
Heavy Trucks:	64.7	63.3	54.3	55.5	63.9	64.0
Vehicle Noise:	71.9	70.2	67.1	62.4	70.9	71.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	75	161	347	748
CNEL:	80	173	373	803

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Cajalco Rd.
Road Segment: e/o I-15 SB Ramps
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,005 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,901 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	2.67	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-14.56	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-18.52	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.5	67.6	65.8	59.7	68.4	69.0
Medium Trucks:	63.2	61.7	55.4	53.8	62.3	62.5
Heavy Trucks:	64.1	62.6	53.6	54.9	63.2	63.3
Vehicle Noise:	71.3	69.6	66.4	61.7	70.3	70.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	68	146	314	677
CNEL:	73	157	337	726

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Cajalco Rd.
Road Segment: e/o I-15 NB Ramps
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	32,680 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,268 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	3.19	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-14.05	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-18.00	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.0	68.1	66.3	60.3	68.9	69.5
Medium Trucks:	63.7	62.2	55.9	54.3	62.8	63.0
Heavy Trucks:	64.6	63.2	54.1	55.4	63.7	63.9
Vehicle Noise:	71.8	70.1	66.9	62.2	70.8	71.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	73	158	340	733
CNEL:	79	169	365	787

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Cajalco Rd.
Road Segment: e/o Grand Oaks
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,980 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,998 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.05	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-16.18	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-20.14	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.8	65.9	64.2	58.1	66.7	67.3
Medium Trucks:	61.6	60.1	53.7	52.2	60.7	60.9
Heavy Trucks:	62.5	61.0	52.0	53.2	61.6	61.7
Vehicle Noise:	69.7	67.9	64.8	60.1	68.6	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	53	114	245	528
CNEL:	57	122	263	567

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Cajalco Rd.
Road Segment: e/o Temescal Cyn. Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,190 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,119 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.31	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-15.93	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-19.88	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	66.2	64.4	58.4	67.0	67.6
Medium Trucks:	61.9	60.4	54.0	52.4	60.9	61.1
Heavy Trucks:	62.7	61.3	52.3	53.5	61.9	62.0
Vehicle Noise:	69.9	68.2	65.0	60.4	68.9	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	55	118	255	549
CNEL:	59	127	274	589

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021
Road Name: Masters Dr.
Road Segment: n/o California Av.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,049 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	505 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-4.41	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-21.65	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-25.60	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.4	61.5	59.7	53.7	62.3	62.9
Medium Trucks:	57.4	55.9	49.5	48.0	56.4	56.7
Heavy Trucks:	58.7	57.3	48.3	49.5	57.9	58.0
Vehicle Noise:	65.4	63.7	60.4	55.8	64.4	64.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	14	31	67	144
CNEL:	15	33	71	154

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021
Road Name: Masters Dr.
Road Segment: s/o California Av.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,071 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,007 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.41	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-18.65	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-22.60	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.4	64.5	62.7	56.7	65.3	65.9
Medium Trucks:	60.4	58.9	52.5	51.0	59.4	59.7
Heavy Trucks:	61.7	60.3	51.3	52.5	60.9	61.0
Vehicle Noise:	68.4	66.7	63.4	58.8	67.4	67.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	23	49	106	228
CNEL:	24	52	113	244

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021
Road Name: Masters Dr.
Road Segment: n/o Bennet Av.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,578 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	758 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.64	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-19.88	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-23.84	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.1	63.2	61.5	55.4	64.0	64.7
Medium Trucks:	59.2	57.7	51.3	49.7	58.2	58.4
Heavy Trucks:	60.5	59.1	50.0	51.3	59.6	59.8
Vehicle Noise:	67.2	65.4	62.2	57.6	66.1	66.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	41	87	188
CNEL:	20	43	94	202

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021
Road Name: Masters Dr.
Road Segment: n/o Eagle Glen Pkwy.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,098 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	710 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.93	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-20.17	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-24.12	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.9	63.0	61.2	55.1	63.8	64.4
Medium Trucks:	58.9	57.4	51.0	49.5	57.9	58.2
Heavy Trucks:	60.2	58.8	49.7	51.0	59.3	59.5
Vehicle Noise:	66.9	65.2	61.9	57.3	65.9	66.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	18	39	84	180
CNEL:	19	42	90	193

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021
Road Name: Bedford Cyn. Rd.
Road Segment: s/o El Cerrito Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,133 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,013 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	38.0 feet
Centerline Dist. to Observer:	38.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	36.401
Medium Trucks:	36.157
Heavy Trucks:	36.181

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.38	1.96	-1.20	-4.57	0.000	0.000
Medium Trucks:	77.72	-18.62	2.01	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-22.58	2.00	-1.20	-5.59	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.9	64.0	62.2	56.2	64.8	65.4
Medium Trucks:	59.9	58.4	52.0	50.5	58.9	59.2
Heavy Trucks:	61.2	59.8	50.8	52.0	60.4	60.5
Vehicle Noise:	67.9	66.2	62.9	58.4	66.9	67.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	24	51	109	236
CNEL:	25	54	117	253

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021
Road Name: Bedford Cyn. Rd.
Road Segment: n/o Georgetown Dr.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,522 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	952 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	38.0 feet
Centerline Dist. to Observer:	38.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	36.401
Medium Trucks:	36.157
Heavy Trucks:	36.181

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.65	1.96	-1.20	-4.57	0.000	0.000
Medium Trucks:	77.72	-18.89	2.01	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-22.85	2.00	-1.20	-5.59	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.6	63.7	62.0	55.9	64.5	65.1
Medium Trucks:	59.6	58.1	51.8	50.2	58.7	58.9
Heavy Trucks:	61.0	59.5	50.5	51.7	60.1	60.2
Vehicle Noise:	67.6	65.9	62.6	58.1	66.6	67.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	23	49	105	226
CNEL:	24	52	112	242

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021
Road Name: Bedford Cyn. Rd.
Road Segment: n/o Eagle Glen Pkwy.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,542 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,054 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	38.0 feet
Centerline Dist. to Observer:	38.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.401
Medium Trucks:	36.157
Heavy Trucks:	36.181

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-1.21	1.96	-1.20	*-4.57*	0.000	0.000
Medium Trucks:	77.72	-18.45	2.01	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-22.40	2.00	-1.20	*-5.59*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.1	64.2	62.4	56.3	65.0	65.6
Medium Trucks:	60.1	58.6	52.2	50.7	59.1	59.4
Heavy Trucks:	61.4	60.0	50.9	52.2	60.5	60.7
Vehicle Noise:	68.1	66.4	63.1	58.5	67.1	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	24	52	112	242
CNEL:	26	56	120	259

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021
Road Name: Temescal Cyn. Rd.
Road Segment: n/o Cajalco Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,168 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,717 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	51 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	53.0 feet
Centerline Dist. to Observer:	53.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	46.731
Medium Trucks:	46.541
Heavy Trucks:	46.559

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	0.40	0.34	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-16.84	0.36	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-20.80	0.36	-1.20	*-5.40*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.0	66.1	64.3	58.3	66.9	67.5
Medium Trucks:	61.8	60.3	53.9	52.4	60.8	61.0
Heavy Trucks:	62.6	61.2	52.2	53.4	61.8	61.9
Vehicle Noise:	69.8	68.1	64.9	60.3	68.8	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	44	95	205	441
CNEL:	47	102	220	474

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021
Road Name: Temescal Cyn. Rd.
Road Segment: s/o Cajalco Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,029 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,403 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	51 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	53.0 feet
Centerline Dist. to Observer:	53.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	46.731
Medium Trucks:	46.541
Heavy Trucks:	46.559

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	1.86	0.34	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-15.38	0.36	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-19.34	0.36	-1.20	*-5.40*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	69.5	67.6	65.8	59.7	68.4	69.0
Medium Trucks:	63.2	61.7	55.4	53.8	62.3	62.5
Heavy Trucks:	64.1	62.7	53.6	54.9	63.2	63.3
Vehicle Noise:	71.3	69.6	66.4	61.7	70.3	70.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	55	119	256	552
CNEL:	59	128	275	592

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021
Road Name: California Av.
Road Segment: w/o Masters Dr.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,912 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	591 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-3.72	2.48	-1.20	*-4.53*	0.000	0.000
Medium Trucks:	77.72	-20.96	2.53	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	82.99	-24.92	2.52	-1.20	*-5.67*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.1	62.2	60.4	54.3	63.0	63.6
Medium Trucks:	58.1	56.6	50.2	48.7	57.1	57.4
Heavy Trucks:	59.4	58.0	48.9	50.2	58.5	58.7
Vehicle Noise:	66.1	64.4	61.1	56.5	65.1	65.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	16	34	74	160
CNEL:	17	37	79	171

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 | Project Name: Bedford Marketplace
Road Name: California Av. | Job Number: 12751
Road Segment: e/o Masters Dr.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,897 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	790 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.46	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-19.70	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-23.66	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.3	63.4	61.7	55.6	64.2	64.8
Medium Trucks:	59.3	57.8	51.5	49.9	58.4	58.6
Heavy Trucks:	60.7	59.2	50.2	51.5	59.8	59.9
Vehicle Noise:	67.3	65.6	62.3	57.8	66.3	66.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	42	90	193
CNEL:	21	45	96	207

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 | Project Name: Bedford Marketplace
Road Name: El Cerrito Rd. | Job Number: 12751
Road Segment: w/o Bedford Cyn. Rd.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,108 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,711 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.89	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-14.35	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-18.30	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.5	67.6	65.8	59.8	68.4	69.0
Medium Trucks:	63.5	62.0	55.6	54.1	62.5	62.8
Heavy Trucks:	64.8	63.4	54.3	55.6	63.9	64.1
Vehicle Noise:	71.5	69.8	66.5	61.9	70.5	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	102	220	473
CNEL:	51	109	235	507

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 | Project Name: Bedford Marketplace
Road Name: El Cerrito Rd. | Job Number: 12751
Road Segment: e/o Bedford Cyn. Rd.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,244 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,824 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.07	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-14.17	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-18.12	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.7	67.8	66.0	59.9	68.6	69.2
Medium Trucks:	63.7	62.2	55.8	54.2	62.7	62.9
Heavy Trucks:	65.0	63.6	54.5	55.8	64.1	64.3
Vehicle Noise:	71.7	69.9	66.7	62.1	70.7	71.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	105	226	487
CNEL:	52	112	242	521

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 | Project Name: Bedford Marketplace
Road Name: El Cerrito Rd. | Job Number: 12751
Road Segment: e/o I-15 SB Ramps

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,329 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,833 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	1.19	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-16.05	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-20.00	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.8	65.9	64.1	58.1	66.7	67.3
Medium Trucks:	61.8	60.3	53.9	52.4	60.8	61.1
Heavy Trucks:	63.1	61.7	52.6	53.9	62.2	62.4
Vehicle Noise:	69.8	68.1	64.8	60.2	68.8	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	36	79	169	365
CNEL:	39	84	181	390

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021
Road Name: El Cerrito Rd.
Road Segment: e/o I-15 NB Ramps
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,909 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,091 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.06	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-18.30	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-22.26	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.5	63.6	61.9	55.8	64.4	65.0
Medium Trucks:	59.5	58.0	51.7	50.1	58.6	58.8
Heavy Trucks:	60.8	59.4	50.4	51.6	60.0	60.1
Vehicle Noise:	67.5	65.8	62.5	58.0	66.5	67.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	26	56	120	258
CNEL:	28	60	128	276

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021
Road Name: Eagle Glen Pkwy.
Road Segment: e/o Masters Dr.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,861 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,086 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	1.75	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-15.48	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-19.44	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.3	66.4	64.7	58.6	67.2	67.8
Medium Trucks:	62.3	60.8	54.5	52.9	61.4	61.6
Heavy Trucks:	63.7	62.2	53.2	54.5	62.8	62.9
Vehicle Noise:	70.4	68.6	65.3	60.8	69.3	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	40	86	185	398
CNEL:	43	92	198	426

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021
Road Name: Eagle Glen Pkwy.
Road Segment: e/o Bedford Cyn. Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,209 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,521 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	3.52	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-13.72	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-17.68	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.3	68.4	66.6	60.6	69.2	69.8
Medium Trucks:	64.1	62.6	56.2	54.7	63.1	63.3
Heavy Trucks:	64.9	63.5	54.5	55.7	64.1	64.2
Vehicle Noise:	72.1	70.4	67.2	62.6	71.1	71.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	77	166	358	771
CNEL:	83	178	384	827

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021
Road Name: Cajalco Rd.
Road Segment: e/o I-15 SB Ramps
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	30,671 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,067 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	2.92	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-14.32	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-18.28	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.7	67.8	66.0	60.0	68.6	69.2
Medium Trucks:	63.5	62.0	55.6	54.1	62.5	62.7
Heavy Trucks:	64.3	62.9	53.9	55.1	63.5	63.6
Vehicle Noise:	71.5	69.8	66.6	62.0	70.5	71.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	70	151	326	703
CNEL:	75	162	350	754

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 | Project Name: Bedford Marketplace
Road Name: Cajalco Rd. | Job Number: 12751
Road Segment: e/o I-15 NB Ramps

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,178 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,518 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	3.51	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-13.73	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-17.68	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.3	68.4	66.6	60.6	69.2	69.8
Medium Trucks:	64.1	62.6	56.2	54.6	63.1	63.3
Heavy Trucks:	64.9	63.5	54.5	55.7	64.1	64.2
Vehicle Noise:	72.1	70.4	67.2	62.6	71.1	71.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	77	166	358	770
CNEL:	83	178	383	826

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 | Project Name: Bedford Marketplace
Road Name: Cajalco Rd. | Job Number: 12751
Road Segment: e/o Grand Oaks

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,465 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,147 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.37	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-15.87	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-19.83	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	66.2	64.5	58.4	67.0	67.7
Medium Trucks:	61.9	60.4	54.0	52.5	61.0	61.2
Heavy Trucks:	62.8	61.3	52.3	53.6	61.9	62.0
Vehicle Noise:	70.0	68.2	65.1	60.4	69.0	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	55	119	257	554
CNEL:	59	128	276	594

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 | Project Name: Bedford Marketplace
Road Name: Cajalco Rd. | Job Number: 12751
Road Segment: e/o Temescal Cyn. Rd.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,844 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,284 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.64	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-15.60	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-19.56	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.4	66.5	64.8	58.7	67.3	67.9
Medium Trucks:	62.2	60.7	54.3	52.8	61.2	61.5
Heavy Trucks:	63.0	61.6	52.6	53.8	62.2	62.3
Vehicle Noise:	70.3	68.5	65.4	60.7	69.2	69.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	58	124	268	578
CNEL:	62	133	288	620

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 Plus Project | Project Name: Bedford Marketplace
Road Name: Masters Dr. | Job Number: 12751
Road Segment: n/o California Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,069 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	507 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-4.39	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-21.63	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-25.58	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.4	61.5	59.7	53.7	62.3	62.9
Medium Trucks:	57.4	55.9	49.5	48.0	56.5	56.7
Heavy Trucks:	58.7	57.3	48.3	49.5	57.9	58.0
Vehicle Noise:	65.4	63.7	60.4	55.9	64.4	64.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	14	31	67	144
CNEL:	15	33	72	154

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 Plus Project
Road Name: Masters Dr.
Road Segment: s/o California Av.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,153 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,015 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.37	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-18.61	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-22.57	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.4	64.5	62.8	56.7	65.3	65.9
Medium Trucks:	60.4	58.9	52.6	51.0	59.5	59.7
Heavy Trucks:	61.8	60.3	51.3	52.5	60.9	61.0
Vehicle Noise:	68.4	66.7	63.4	58.9	67.4	67.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	23	49	106	229
CNEL:	24	53	114	245

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 Plus Project
Road Name: Masters Dr.
Road Segment: n/o Bennet Av.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,784 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	778 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.53	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-19.77	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-23.72	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.3	63.4	61.6	55.5	64.2	64.8
Medium Trucks:	59.3	57.8	51.4	49.9	58.3	58.6
Heavy Trucks:	60.6	59.2	50.1	51.4	59.7	59.9
Vehicle Noise:	67.3	65.6	62.3	57.7	66.3	66.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	41	89	192
CNEL:	21	44	95	205

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 Plus Project
Road Name: Masters Dr.
Road Segment: n/o Eagle Glen Pkwy.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,346 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	735 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.78	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-20.02	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-23.97	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.0	63.1	61.3	55.3	63.9	64.5
Medium Trucks:	59.0	57.5	51.2	49.6	58.1	58.3
Heavy Trucks:	60.3	58.9	49.9	51.1	59.5	59.6
Vehicle Noise:	67.0	65.3	62.0	57.5	66.0	66.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	18	40	86	184
CNEL:	20	43	92	197

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 Plus Project
Road Name: Bedford Cyn. Rd.
Road Segment: s/o El Cerrito Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,401 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,040 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	38.0 feet
Centerline Dist. to Observer:	38.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	36.401
Medium Trucks:	36.157
Heavy Trucks:	36.181

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.27	1.96	-1.20	-4.57	0.000	0.000
Medium Trucks:	77.72	-18.51	2.01	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-22.46	2.00	-1.20	-5.59	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.0	64.1	62.3	56.3	64.9	65.5
Medium Trucks:	60.0	58.5	52.1	50.6	59.1	59.3
Heavy Trucks:	61.3	59.9	50.9	52.1	60.5	60.6
Vehicle Noise:	68.0	66.3	63.0	58.5	67.0	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	24	52	111	240
CNEL:	26	55	119	257

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 Plus Project
Road Name: Bedford Cyn. Rd.
Road Segment: n/o Georgetown Dr.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,790	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	979	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	24	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	38.0	feet
Centerline Dist. to Observer:	38.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.401
Medium Trucks:	36.157
Heavy Trucks:	36.181

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-1.53	1.96	-1.20	*-4.57*	0.000	0.000
Medium Trucks:	77.72	-18.77	2.01	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-22.73	2.00	-1.20	*-5.59*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.7	63.8	62.1	56.0	64.6	65.3
Medium Trucks:	59.8	58.2	51.9	50.3	58.8	59.0
Heavy Trucks:	61.1	59.7	50.6	51.9	60.2	60.3
Vehicle Noise:	67.8	66.0	62.8	58.2	66.7	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	23	50	107	231
CNEL:	25	53	115	247

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 Plus Project
Road Name: Bedford Cyn. Rd.
Road Segment: n/o Eagle Glen Pkwy.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,852	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,085	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	24	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	38.0	feet
Centerline Dist. to Observer:	38.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.401
Medium Trucks:	36.157
Heavy Trucks:	36.181

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-1.08	1.96	-1.20	*-4.57*	0.000	0.000
Medium Trucks:	77.72	-18.32	2.01	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-22.28	2.00	-1.20	*-5.59*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.2	64.3	62.5	56.5	65.1	65.7
Medium Trucks:	60.2	58.7	52.3	50.8	59.2	59.5
Heavy Trucks:	61.5	60.1	51.1	52.3	60.7	60.8
Vehicle Noise:	68.2	66.5	63.2	58.7	67.2	67.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	25	53	115	247
CNEL:	26	57	123	264

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 Plus Project
Road Name: Temescal Cyn. Rd.
Road Segment: n/o Cajalco Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,230	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,723	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	51	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	53.0	feet
Centerline Dist. to Observer:	53.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	46.731
Medium Trucks:	46.541
Heavy Trucks:	46.559

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	0.41	0.34	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-16.83	0.36	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-20.78	0.36	-1.20	*-5.40*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.0	66.1	64.3	58.3	66.9	67.5
Medium Trucks:	61.8	60.3	53.9	52.4	60.8	61.1
Heavy Trucks:	62.6	61.2	52.2	53.4	61.8	61.9
Vehicle Noise:	69.9	68.1	65.0	60.3	68.8	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	44	95	205	443
CNEL:	47	102	220	475

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 Plus Project
Road Name: Temescal Cyn. Rd.
Road Segment: s/o Cajalco Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,091	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,409	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	51	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	53.0	feet
Centerline Dist. to Observer:	53.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	46.731
Medium Trucks:	46.541
Heavy Trucks:	46.559

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	1.87	0.34	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-15.37	0.36	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-19.33	0.36	-1.20	*-5.40*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	69.5	67.6	65.8	59.7	68.4	69.0
Medium Trucks:	63.2	61.7	55.4	53.8	62.3	62.5
Heavy Trucks:	64.1	62.7	53.6	54.9	63.2	63.4
Vehicle Noise:	71.3	69.6	66.4	61.7	70.3	70.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	55	119	257	553
CNEL:	59	128	275	593

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 Plus Project
Road Name: California Av.
Road Segment: w/o Masters Dr.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,954 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	595 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-3.69	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-20.93	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-24.89	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.1	62.2	60.4	54.4	63.0	63.6
Medium Trucks:	58.1	56.6	50.2	48.7	57.2	57.4
Heavy Trucks:	59.4	58.0	49.0	50.2	58.6	58.7
Vehicle Noise:	66.1	64.4	61.1	56.6	65.1	65.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	35	74	160
CNEL:	17	37	80	172

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 Plus Project
Road Name: California Av.
Road Segment: e/o Masters Dr.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,917 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	792 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.45	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-19.69	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-23.65	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.3	63.4	61.7	55.6	64.2	64.8
Medium Trucks:	59.4	57.8	51.5	49.9	58.4	58.6
Heavy Trucks:	60.7	59.2	50.2	51.5	59.8	59.9
Vehicle Noise:	67.4	65.6	62.3	57.8	66.3	66.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	42	90	194
CNEL:	21	45	96	207

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 Plus Project
Road Name: El Cerrito Rd.
Road Segment: w/o Bedford Cyn. Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,294 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,729 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.92	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-14.32	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-18.27	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.5	67.6	65.8	59.8	68.4	69.0
Medium Trucks:	63.5	62.0	55.6	54.1	62.6	62.8
Heavy Trucks:	64.8	63.4	54.4	55.6	64.0	64.1
Vehicle Noise:	71.5	69.8	66.5	62.0	70.5	71.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	48	102	221	476
CNEL:	51	110	236	509

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 Plus Project
Road Name: El Cerrito Rd.
Road Segment: e/o Bedford Cyn. Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,326 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,833 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.08	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-14.16	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-18.11	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.7	67.8	66.0	60.0	68.6	69.2
Medium Trucks:	63.7	62.2	55.8	54.3	62.7	62.9
Heavy Trucks:	65.0	63.6	54.5	55.8	64.1	64.3
Vehicle Noise:	71.7	70.0	66.7	62.1	70.7	71.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	105	226	487
CNEL:	52	112	242	522

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 Plus Project
Road Name: El Cerrito Rd.
Road Segment: e/o I-15 SB Ramps
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,411 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,841 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	1.21	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-16.03	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-19.98	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.8	65.9	64.1	58.1	66.7	67.3
Medium Trucks:	61.8	60.3	53.9	52.4	60.8	61.1
Heavy Trucks:	63.1	61.7	52.7	53.9	62.3	62.4
Vehicle Noise:	69.8	68.1	64.8	60.3	68.8	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	37	79	170	366
CNEL:	39	84	182	392

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 Plus Project
Road Name: El Cerrito Rd.
Road Segment: e/o I-15 NB Ramps
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,991 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,099 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.03	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-18.27	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-22.22	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.6	63.7	61.9	55.8	64.5	65.1
Medium Trucks:	59.6	58.1	51.7	50.1	58.6	58.8
Heavy Trucks:	60.9	59.5	50.4	51.7	60.0	60.2
Vehicle Noise:	67.6	65.8	62.6	58.0	66.6	67.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	26	56	120	259
CNEL:	28	60	129	278

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 Plus Project
Road Name: Eagle Glen Pkwy.
Road Segment: e/o Masters Dr.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,109 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,111 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	1.81	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-15.43	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-19.39	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.4	66.5	64.7	58.7	67.3	67.9
Medium Trucks:	62.4	60.9	54.5	53.0	61.4	61.7
Heavy Trucks:	63.7	62.3	53.3	54.5	62.9	63.0
Vehicle Noise:	70.4	68.7	65.4	60.9	69.4	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	40	86	186	401
CNEL:	43	92	199	429

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 Plus Project
Road Name: Eagle Glen Pkwy.
Road Segment: e/o Bedford Cyn. Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,713 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,671 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	3.70	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-13.54	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-17.50	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.5	68.6	66.8	60.8	69.4	70.0
Medium Trucks:	64.2	62.7	56.4	54.8	63.3	63.5
Heavy Trucks:	65.1	63.7	54.6	55.9	64.2	64.4
Vehicle Noise:	72.3	70.6	67.4	62.7	71.3	71.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	79	171	368	793
CNEL:	85	183	395	850

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 Plus Project
Road Name: Cajalco Rd.
Road Segment: e/o I-15 SB Ramps
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	31,546 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,155 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	3.04	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-14.20	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-18.16	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.8	67.9	66.2	60.1	68.7	69.3
Medium Trucks:	63.6	62.1	55.7	54.2	62.6	62.9
Heavy Trucks:	64.4	63.0	54.0	55.2	63.6	63.7
Vehicle Noise:	71.7	69.9	66.8	62.1	70.6	71.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	72	154	332	716
CNEL:	77	166	357	768

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 Plus Project
Road Name: Cajalco Rd.
Road Segment: e/o I-15 NB Ramps
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,426 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,543 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	3.54	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-13.70	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-17.65	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.3	68.4	66.7	60.6	69.2	69.8
Medium Trucks:	64.1	62.6	56.2	54.7	63.1	63.4
Heavy Trucks:	64.9	63.5	54.5	55.7	64.1	64.2
Vehicle Noise:	72.2	70.4	67.3	62.6	71.1	71.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	77	167	359	774
CNEL:	83	179	385	830

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 Plus Project
Road Name: Cajalco Rd.
Road Segment: e/o Grand Oaks
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,713 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,171 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.42	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-15.82	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-19.78	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.2	66.3	64.5	58.5	67.1	67.7
Medium Trucks:	62.0	60.5	54.1	52.6	61.0	61.2
Heavy Trucks:	62.8	61.4	52.4	53.6	62.0	62.1
Vehicle Noise:	70.0	68.3	65.1	60.5	69.0	69.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	120	259	558
CNEL:	60	129	278	599

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Interim Year 2021 Plus Project
Road Name: Cajalco Rd.
Road Segment: e/o Temescal Cyn. Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,968 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,297 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.66	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-15.58	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-19.53	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.4	66.5	64.8	58.7	67.3	67.9
Medium Trucks:	62.2	60.7	54.3	52.8	61.3	61.5
Heavy Trucks:	63.1	61.6	52.6	53.8	62.2	62.3
Vehicle Noise:	70.3	68.5	65.4	60.7	69.3	69.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	58	125	269	580
CNEL:	62	134	289	622

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 | Project Name: Bedford Marketplace
Road Name: Masters Dr. | Job Number: 12751
Road Segment: n/o California Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	800 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.41	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-19.65	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-23.60	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.4	63.5	61.7	55.7	64.3	64.9
Medium Trucks:	59.4	57.9	51.5	50.0	58.4	58.7
Heavy Trucks:	60.7	59.3	50.3	51.5	59.9	60.0
Vehicle Noise:	67.4	65.7	62.4	57.8	66.4	66.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	20	42	91	195
CNEL:	21	45	97	209

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 | Project Name: Bedford Marketplace
Road Name: Masters Dr. | Job Number: 12751
Road Segment: s/o California Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	880 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.99	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-19.23	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-23.19	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.8	63.9	62.1	56.1	64.7	65.3
Medium Trucks:	59.8	58.3	51.9	50.4	58.9	59.1
Heavy Trucks:	61.1	59.7	50.7	51.9	60.3	60.4
Vehicle Noise:	67.8	66.1	62.8	58.3	66.8	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	21	45	97	208
CNEL:	22	48	103	223

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 | Project Name: Bedford Marketplace
Road Name: Masters Dr. | Job Number: 12751
Road Segment: n/o Bennet Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	640 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-3.38	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-20.62	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-24.57	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.4	62.5	60.7	54.7	63.3	63.9
Medium Trucks:	58.4	56.9	50.6	49.0	57.5	57.7
Heavy Trucks:	59.7	58.3	49.3	50.5	58.9	59.0
Vehicle Noise:	66.4	64.7	61.4	56.9	65.4	65.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	36	78	168
CNEL:	18	39	84	180

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 | Project Name: Bedford Marketplace
Road Name: Masters Dr. | Job Number: 12751
Road Segment: n/o Eagle Glen Pkwy.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	610 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-3.59	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-20.82	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-24.78	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.2	62.3	60.5	54.5	63.1	63.7
Medium Trucks:	58.2	56.7	50.4	48.8	57.3	57.5
Heavy Trucks:	59.5	58.1	49.1	50.3	58.7	58.8
Vehicle Noise:	66.2	64.5	61.2	56.7	65.2	65.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	35	76	163
CNEL:	17	38	81	174

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 | Project Name: Bedford Marketplace
Road Name: Bedford Cyn. Rd. | Job Number: 12751
Road Segment: s/o El Cerrito Rd.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,450 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	38.0 feet
Centerline Dist. to Observer:	38.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	36.401
Medium Trucks:	36.157
Heavy Trucks:	36.181

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.17	1.96	-1.20	-4.57	0.000	0.000
Medium Trucks:	77.72	-17.06	2.01	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-21.02	2.00	-1.20	-5.59	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.5	65.6	63.8	57.7	66.4	67.0
Medium Trucks:	61.5	60.0	53.6	52.0	60.5	60.7
Heavy Trucks:	62.8	61.4	52.3	53.6	61.9	62.1
Vehicle Noise:	69.5	67.7	64.5	59.9	68.5	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	65	139	300
CNEL:	32	69	149	321

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 | Project Name: Bedford Marketplace
Road Name: Bedford Cyn. Rd. | Job Number: 12751
Road Segment: n/o Georgetown Dr.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,450 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	38.0 feet
Centerline Dist. to Observer:	38.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	36.401
Medium Trucks:	36.157
Heavy Trucks:	36.181

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.17	1.96	-1.20	-4.57	0.000	0.000
Medium Trucks:	77.72	-17.06	2.01	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-21.02	2.00	-1.20	-5.59	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.5	65.6	63.8	57.7	66.4	67.0
Medium Trucks:	61.5	60.0	53.6	52.0	60.5	60.7
Heavy Trucks:	62.8	61.4	52.3	53.6	61.9	62.1
Vehicle Noise:	69.5	67.7	64.5	59.9	68.5	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	65	139	300
CNEL:	32	69	149	321

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 | Project Name: Bedford Marketplace
Road Name: Bedford Cyn. Rd. | Job Number: 12751
Road Segment: n/o Eagle Glen Pkwy.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,420 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	38.0 feet
Centerline Dist. to Observer:	38.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	36.401
Medium Trucks:	36.157
Heavy Trucks:	36.181

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.08	1.96	-1.20	-4.57	0.000	0.000
Medium Trucks:	77.72	-17.15	2.01	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-21.11	2.00	-1.20	-5.59	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.4	65.5	63.7	57.6	66.3	66.9
Medium Trucks:	61.4	59.9	53.5	52.0	60.4	60.6
Heavy Trucks:	62.7	61.3	52.2	53.5	61.8	62.0
Vehicle Noise:	69.4	67.7	64.4	59.8	68.4	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	64	137	295
CNEL:	32	68	147	316

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 | Project Name: Bedford Marketplace
Road Name: Temescal Cyn. Rd. | Job Number: 12751
Road Segment: n/o Cajalco Rd.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,650 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	51 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	53.0 feet
Centerline Dist. to Observer:	53.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.731
Medium Trucks:	46.541
Heavy Trucks:	46.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	2.28	0.34	-1.20	-4.66	0.000	0.000
Medium Trucks:	79.45	-14.96	0.36	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-18.91	0.36	-1.20	-5.40	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.9	68.0	66.2	60.2	68.8	69.4
Medium Trucks:	63.7	62.1	55.8	54.2	62.7	62.9
Heavy Trucks:	64.5	63.1	54.0	55.3	63.6	63.8
Vehicle Noise:	71.7	70.0	66.8	62.2	70.7	71.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	127	274	590
CNEL:	63	136	294	632

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035
Road Name: Temescal Cyn. Rd.
Road Segment: s/o Cajalco Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,100 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	51 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	53.0 feet
Centerline Dist. to Observer:	53.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.731
Medium Trucks:	46.541
Heavy Trucks:	46.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.27	0.34	-1.20	-4.66	0.000	0.000
Medium Trucks:	79.45	-15.97	0.36	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-19.92	0.36	-1.20	-5.40	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.9	67.0	65.2	59.1	67.8	68.4
Medium Trucks:	62.6	61.1	54.8	53.2	61.7	61.9
Heavy Trucks:	63.5	62.1	53.0	54.3	62.6	62.8
Vehicle Noise:	70.7	69.0	65.8	61.1	69.7	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	50	109	234	505
CNEL:	54	117	251	542

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035
Road Name: California Av.
Road Segment: w/o Masters Dr.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	830 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.25	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-19.49	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-23.44	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.5	63.6	61.9	55.8	64.4	65.0
Medium Trucks:	59.6	58.0	51.7	50.1	58.6	58.8
Heavy Trucks:	60.9	59.5	50.4	51.7	60.0	60.1
Vehicle Noise:	67.6	65.8	62.5	58.0	66.5	67.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	20	43	93	200
CNEL:	21	46	99	214

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035
Road Name: California Av.
Road Segment: e/o Masters Dr.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,080 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.11	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-18.34	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-22.30	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.7	64.8	63.0	57.0	65.6	66.2
Medium Trucks:	60.7	59.2	52.8	51.3	59.7	60.0
Heavy Trucks:	62.0	60.6	51.6	52.8	61.2	61.3
Vehicle Noise:	68.7	67.0	63.7	59.2	67.7	68.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	24	51	111	238
CNEL:	26	55	118	255

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035
Road Name: El Cerrito Rd.
Road Segment: w/o Bedford Cyn. Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,900 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.18	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-14.05	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-18.01	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.8	67.9	66.1	60.1	68.7	69.3
Medium Trucks:	63.8	62.3	55.9	54.4	62.8	63.1
Heavy Trucks:	65.1	63.7	54.6	55.9	64.2	64.4
Vehicle Noise:	71.8	70.1	66.8	62.2	70.8	71.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	50	107	230	495
CNEL:	53	114	246	530

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035
Road Name: El Cerrito Rd.
Road Segment: e/o Bedford Cyn. Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,510 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	4.01	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-13.22	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-17.18	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.6	68.7	66.9	60.9	69.5	70.1
Medium Trucks:	64.6	63.1	56.7	55.2	63.6	63.9
Heavy Trucks:	65.9	64.5	55.5	56.7	65.1	65.2
Vehicle Noise:	72.6	70.9	67.6	63.1	71.6	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	121	261	562
CNEL:	60	130	279	602

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035
Road Name: El Cerrito Rd.
Road Segment: e/o I-15 SB Ramps
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,710 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.89	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-14.35	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-18.30	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.5	67.6	65.8	59.8	68.4	69.0
Medium Trucks:	63.5	62.0	55.6	54.1	62.5	62.8
Heavy Trucks:	64.8	63.4	54.3	55.6	63.9	64.1
Vehicle Noise:	71.5	69.8	66.5	61.9	70.5	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	102	220	473
CNEL:	51	109	235	507

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035
Road Name: El Cerrito Rd.
Road Segment: e/o I-15 NB Ramps
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,720 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.92	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-16.32	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-20.28	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.5	65.6	63.8	57.8	66.4	67.0
Medium Trucks:	61.5	60.0	53.6	52.1	60.6	60.8
Heavy Trucks:	62.8	61.4	52.4	53.6	62.0	62.1
Vehicle Noise:	69.5	67.8	64.5	60.0	68.5	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	35	75	162	350
CNEL:	37	81	174	374

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035
Road Name: Eagle Glen Pkwy.
Road Segment: e/o Masters Dr.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,730 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.94	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-16.30	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-20.25	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.5	65.6	63.9	57.8	66.4	67.0
Medium Trucks:	61.5	60.0	53.7	52.1	60.6	60.8
Heavy Trucks:	62.8	61.4	52.4	53.6	62.0	62.1
Vehicle Noise:	69.5	67.8	64.5	60.0	68.5	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	35	76	163	351
CNEL:	38	81	174	376

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035
Road Name: Eagle Glen Pkwy.
Road Segment: e/o Bedford Cyn. Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,060 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.19	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-16.05	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-20.01	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.0	66.1	64.3	58.2	66.9	67.5
Medium Trucks:	61.7	60.2	53.9	52.3	60.8	61.0
Heavy Trucks:	62.6	61.2	52.1	53.4	61.7	61.9
Vehicle Noise:	69.8	68.1	64.9	60.2	68.8	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	54	116	250	539
CNEL:	58	125	268	578

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035
Road Name: Cajalco Rd.
Road Segment: e/o I-15 SB Ramps
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,490 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	2.01	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-15.23	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-19.18	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.8	66.9	65.1	59.1	67.7	68.3
Medium Trucks:	62.6	61.1	54.7	53.1	61.6	61.8
Heavy Trucks:	63.4	62.0	53.0	54.2	62.6	62.7
Vehicle Noise:	70.6	68.9	65.7	61.1	69.6	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	61	132	284	612
CNEL:	66	141	305	656

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035
Road Name: Cajalco Rd.
Road Segment: e/o I-15 NB Ramps
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	30,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,070 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	2.92	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-14.32	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-18.27	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.7	67.8	66.0	60.0	68.6	69.2
Medium Trucks:	63.5	62.0	55.6	54.1	62.5	62.8
Heavy Trucks:	64.3	62.9	53.9	55.1	63.5	63.6
Vehicle Noise:	71.5	69.8	66.6	62.0	70.5	71.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	70	152	326	703
CNEL:	75	163	350	755

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035
Road Name: Cajalco Rd.
Road Segment: e/o Grand Oaks
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,900 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	0.84	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-16.40	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-20.36	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.6	65.7	64.0	57.9	66.5	67.1
Medium Trucks:	61.4	59.9	53.5	52.0	60.4	60.7
Heavy Trucks:	62.2	60.8	51.8	53.0	61.4	61.5
Vehicle Noise:	69.5	67.7	64.6	59.9	68.4	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	51	110	237	511
CNEL:	55	118	254	548

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035
Road Name: Cajalco Rd.
Road Segment: e/o Temescal Cyn. Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	30,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,000 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	2.82	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-14.42	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-18.37	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.6	67.7	65.9	59.9	68.5	69.1
Medium Trucks:	63.4	61.9	55.5	54.0	62.4	62.7
Heavy Trucks:	64.2	62.8	53.8	55.0	63.4	63.5
Vehicle Noise:	71.4	69.7	66.5	61.9	70.4	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	69	149	322	693
CNEL:	74	160	345	743

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 Plus Project
Road Name: Masters Dr.
Road Segment: n/o California Av.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,250 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	825 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.27	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-19.51	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-23.47	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.5	63.6	61.8	55.8	64.4	65.0
Medium Trucks:	59.5	58.0	51.7	50.1	58.6	58.8
Heavy Trucks:	60.8	59.4	50.4	51.6	60.0	60.1
Vehicle Noise:	67.5	65.8	62.5	58.0	66.5	67.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	20	43	92	199
CNEL:	21	46	99	213

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 Plus Project
Road Name: Masters Dr.
Road Segment: s/o California Av.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,668 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	967 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-1.59	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-18.82	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-22.78	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.2	64.3	62.5	56.5	65.1	65.7
Medium Trucks:	60.2	58.7	52.4	50.8	59.3	59.5
Heavy Trucks:	61.5	60.1	51.1	52.3	60.7	60.8
Vehicle Noise:	68.2	66.5	63.2	58.7	67.2	67.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	22	48	103	221
CNEL:	24	51	110	237

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 Plus Project
Road Name: Masters Dr.
Road Segment: n/o Bennet Av.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,690 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	769 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.58	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-19.82	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-23.77	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.2	63.3	61.5	55.5	64.1	64.7
Medium Trucks:	59.2	57.7	51.4	49.8	58.3	58.5
Heavy Trucks:	60.5	59.1	50.1	51.3	59.7	59.8
Vehicle Noise:	67.2	65.5	62.2	57.7	66.2	66.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	41	88	190
CNEL:	20	44	94	203

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 Plus Project
Road Name: Masters Dr.
Road Segment: n/o Eagle Glen Pkwy.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,532 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	753 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.67	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-19.91	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-23.86	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.1	63.2	61.5	55.4	64.0	64.6
Medium Trucks:	59.1	57.6	51.3	49.7	58.2	58.4
Heavy Trucks:	60.5	59.0	50.0	51.2	59.6	59.7
Vehicle Noise:	67.1	65.4	62.1	57.6	66.1	66.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	40	87	187
CNEL:	20	43	93	201

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 Plus Project
Road Name: Bedford Cyn. Rd.
Road Segment: s/o El Cerrito Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,458 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,646 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	38.0 feet
Centerline Dist. to Observer:	38.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	36.401
Medium Trucks:	36.157
Heavy Trucks:	36.181

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.72	1.96	-1.20	-4.57	0.000	0.000
Medium Trucks:	77.72	-16.51	2.01	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-20.47	2.00	-1.20	-5.59	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.0	66.1	64.3	58.3	66.9	67.5
Medium Trucks:	62.0	60.5	54.1	52.6	61.1	61.3
Heavy Trucks:	63.3	61.9	52.9	54.1	62.5	62.6
Vehicle Noise:	70.0	68.3	65.0	60.5	69.0	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	33	70	151	326
CNEL:	35	75	162	349

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 Plus Project
Road Name: Bedford Cyn. Rd.
Road Segment: n/o Georgetown Dr.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,458 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,646 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	38.0 feet
Centerline Dist. to Observer:	38.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	36.401
Medium Trucks:	36.157
Heavy Trucks:	36.181

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.72	1.96	-1.20	-4.57	0.000	0.000
Medium Trucks:	77.72	-16.51	2.01	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-20.47	2.00	-1.20	-5.59	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.0	66.1	64.3	58.3	66.9	67.5
Medium Trucks:	62.0	60.5	54.1	52.6	61.1	61.3
Heavy Trucks:	63.3	61.9	52.9	54.1	62.5	62.6
Vehicle Noise:	70.0	68.3	65.0	60.5	69.0	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	33	70	151	326
CNEL:	35	75	162	349

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 Plus Project
Road Name: Bedford Cyn. Rd.
Road Segment: n/o Eagle Glen Pkwy.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,298 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,630 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	38.0 feet
Centerline Dist. to Observer:	38.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	36.401
Medium Trucks:	36.157
Heavy Trucks:	36.181

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.68	1.96	-1.20	-4.57	0.000	0.000
Medium Trucks:	77.72	-16.56	2.01	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-20.51	2.00	-1.20	-5.59	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.0	66.1	64.3	58.2	66.9	67.5
Medium Trucks:	62.0	60.5	54.1	52.6	61.0	61.2
Heavy Trucks:	63.3	61.9	52.8	54.1	62.4	62.6
Vehicle Noise:	70.0	68.3	65.0	60.4	69.0	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	70	150	324
CNEL:	35	75	161	347

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 Plus Project
Road Name: Temescal Cyn. Rd.
Road Segment: n/o Cajalco Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,846 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,685 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	51 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	53.0 feet
Centerline Dist. to Observer:	53.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000	
Medium Trucks:	2.297	
Heavy Trucks:	8.006	Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	46.731
Medium Trucks:	46.541
Heavy Trucks:	46.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	2.34	0.34	-1.20	-4.66	0.000	0.000
Medium Trucks:	79.45	-14.90	0.36	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-18.86	0.36	-1.20	-5.40	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.9	68.0	66.3	60.2	68.8	69.4
Medium Trucks:	63.7	62.2	55.8	54.3	62.8	63.0
Heavy Trucks:	64.6	63.1	54.1	55.3	63.7	63.8
Vehicle Noise:	71.8	70.0	66.9	62.2	70.8	71.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	128	276	595
CNEL:	64	137	296	638

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 Plus Project
Road Name: Temescal Cyn. Rd.
Road Segment: s/o Cajalco Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,448 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,845 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	51 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	53.0 feet
Centerline Dist. to Observer:	53.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000	
Medium Trucks:	2.297	
Heavy Trucks:	8.006	Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	46.731
Medium Trucks:	46.541
Heavy Trucks:	46.559

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	2.59	0.34	-1.20	-4.66	0.000	0.000
Medium Trucks:	79.45	-14.65	0.36	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-18.60	0.36	-1.20	-5.40	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.2	68.3	66.5	60.5	69.1	69.7
Medium Trucks:	64.0	62.5	56.1	54.6	63.0	63.2
Heavy Trucks:	64.8	63.4	54.4	55.6	64.0	64.1
Vehicle Noise:	72.0	70.3	67.1	62.5	71.0	71.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	62	133	287	618
CNEL:	66	143	308	663

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 Plus Project
Road Name: California Av.
Road Segment: w/o Masters Dr.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,578 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	858 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000	
Medium Trucks:	2.297	
Heavy Trucks:	8.006	Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.11	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-19.34	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-23.30	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.7	63.8	62.0	56.0	64.6	65.2
Medium Trucks:	59.7	58.2	51.8	50.3	58.7	59.0
Heavy Trucks:	61.0	59.6	50.6	51.8	60.2	60.3
Vehicle Noise:	67.7	66.0	62.7	58.2	66.7	67.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	20	44	95	204
CNEL:	22	47	102	219

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 Plus Project
Road Name: California Av.
Road Segment: e/o Masters Dr.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,140 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,114 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	14 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000	
Medium Trucks:	2.297	
Heavy Trucks:	8.006	Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	33.645
Medium Trucks:	33.381
Heavy Trucks:	33.407

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-0.97	2.48	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-18.21	2.53	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-22.16	2.52	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.8	64.9	63.2	57.1	65.7	66.3
Medium Trucks:	60.8	59.3	53.0	51.4	59.9	60.1
Heavy Trucks:	62.2	60.7	51.7	52.9	61.3	61.4
Vehicle Noise:	68.8	67.1	63.8	59.3	67.8	68.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	24	52	113	243
CNEL:	26	56	121	261

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 Plus Project
Road Name: El Cerrito Rd.
Road Segment: w/o Bedford Cyn. Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	30,270 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,027 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.37	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-13.87	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-17.82	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.0	68.1	66.3	60.2	68.9	69.5
Medium Trucks:	64.0	62.5	56.1	54.5	63.0	63.2
Heavy Trucks:	65.3	63.9	54.8	56.1	64.4	64.6
Vehicle Noise:	72.0	70.2	67.0	62.4	71.0	71.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	51	110	236	509
CNEL:	55	118	253	545

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 Plus Project
Road Name: El Cerrito Rd.
Road Segment: e/o Bedford Cyn. Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,788 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,579 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	4.10	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-13.14	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-17.10	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.7	68.8	67.0	61.0	69.6	70.2
Medium Trucks:	64.7	63.2	56.8	55.3	63.7	64.0
Heavy Trucks:	66.0	64.6	55.5	56.8	65.2	65.3
Vehicle Noise:	72.7	71.0	67.7	63.1	71.7	72.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	57	123	264	570
CNEL:	61	131	283	610

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 Plus Project
Road Name: El Cerrito Rd.
Road Segment: e/o I-15 SB Ramps
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,788 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,779 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.00	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-14.24	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-18.20	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.6	67.7	65.9	59.9	68.5	69.1
Medium Trucks:	63.6	62.1	55.7	54.2	62.6	62.9
Heavy Trucks:	64.9	63.5	54.4	55.7	64.1	64.2
Vehicle Noise:	71.6	69.9	66.6	62.0	70.6	71.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	48	104	223	481
CNEL:	52	111	239	515

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 Plus Project
Road Name: El Cerrito Rd.
Road Segment: e/o I-15 NB Ramps
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,888 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,789 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	1.09	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-16.15	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-20.11	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.7	65.8	64.0	58.0	66.6	67.2
Medium Trucks:	61.7	60.2	53.8	52.3	60.7	61.0
Heavy Trucks:	63.0	61.6	52.5	53.8	62.1	62.3
Vehicle Noise:	69.7	68.0	64.7	60.1	68.7	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	36	77	167	359
CNEL:	38	83	178	384

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 Plus Project
Road Name: Eagle Glen Pkwy.
Road Segment: e/o Masters Dr.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,398 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,440 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	40.460
Medium Trucks:	40.241
Heavy Trucks:	40.262

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.43	1.28	-1.20	-4.61	0.000	0.000
Medium Trucks:	77.72	-14.80	1.31	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-18.76	1.31	-1.20	-5.50	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.0	67.1	65.4	59.3	67.9	68.5
Medium Trucks:	63.0	61.5	55.2	53.6	62.1	62.3
Heavy Trucks:	64.3	62.9	53.9	55.1	63.5	63.6
Vehicle Noise:	71.0	69.3	66.0	61.5	70.0	70.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	44	95	205	441
CNEL:	47	102	219	472

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 Plus Project
Road Name: Eagle Glen Pkwy.
Road Segment: e/o Bedford Cyn. Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,310 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,731 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	3.77	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-13.47	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-17.43	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.5	68.6	66.9	60.8	69.5	70.1
Medium Trucks:	64.3	62.8	56.5	54.9	63.4	63.6
Heavy Trucks:	65.2	63.7	54.7	56.0	64.3	64.4
Vehicle Noise:	72.4	70.6	67.5	62.8	71.4	71.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	80	173	372	801
CNEL:	86	185	399	859

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 Plus Project
Road Name: Cajalco Rd.
Road Segment: e/o I-15 SB Ramps
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	34,560 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,456 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	3.43	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-13.80	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-17.76	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.2	68.3	66.6	60.5	69.1	69.7
Medium Trucks:	64.0	62.5	56.1	54.6	63.0	63.3
Heavy Trucks:	64.8	63.4	54.4	55.6	64.0	64.1
Vehicle Noise:	72.1	70.3	67.2	62.5	71.0	71.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	76	164	353	761
CNEL:	82	176	379	817

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 Plus Project
Road Name: Cajalco Rd.
Road Segment: e/o I-15 NB Ramps
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	33,314 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,331 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	76 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	3.28	-0.48	-1.20	-4.70	0.000	0.000
Medium Trucks:	79.45	-13.96	-0.46	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-17.92	-0.46	-1.20	-5.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.1	68.2	66.4	60.3	69.0	69.6
Medium Trucks:	63.8	62.3	56.0	54.4	62.9	63.1
Heavy Trucks:	64.7	63.3	54.2	55.5	63.8	63.9
Vehicle Noise:	71.9	70.2	67.0	62.3	70.9	71.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	74	160	345	743
CNEL:	80	172	370	797

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 Plus Project
Road Name: Cajalco Rd.
Road Segment: e/o Grand Oaks
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS	
Highway Data		***Site Conditions (Hard = 10, Soft = 15)***	
Average Daily Traffic (Adt):	21,204 vehicles	*Autos:*	15
Peak Hour Percentage:	10%	*Medium Trucks (2 Axles):*	15
Peak Hour Volume:	2,120 vehicles	*Heavy Trucks (3+ Axles):*	15
Vehicle Speed:	45 mph		
Near/Far Lane Distance:	76 feet		

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Site Data		***Noise Source Elevations (in feet)***			
Barrier Height:	**0.0 feet**	*Autos:*	0.000		
Barrier Type (0-Wall, 1-Berm):	0.0	*Medium Trucks:*	2.297		
Centerline Dist. to Barrier:	65.0 feet	*Heavy Trucks:*	8.006	*Grade Adjustment:*	0.0
Centerline Dist. to Observer:	65.0 feet				
Barrier Distance to Observer:	0.0 feet				
Observer Height (Above Pad):	5.0 feet				
Pad Elevation:	0.0 feet				
Road Elevation:	0.0 feet				
Road Grade:	0.0%				
Left View:	-90.0 degrees				
Right View:	90.0 degrees				

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.31	-0.48	-1.20	*-4.70*	0.000	0.000
Medium Trucks:	79.45	-15.93	-0.46	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-19.88	-0.46	-1.20	*-5.30*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	66.2	64.4	58.4	67.0	67.6
Medium Trucks:	61.9	60.4	54.0	52.5	60.9	61.1
Heavy Trucks:	62.7	61.3	52.3	53.5	61.9	62.0
Vehicle Noise:	69.9	68.2	65.0	60.4	68.9	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	55	118	255	550
CNEL:	59	127	274	590

Friday, November 22, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Horizon Year 2035 Plus Project
Road Name: Cajalco Rd.
Road Segment: e/o Temescal Cyn. Rd.
Project Name: Bedford Marketplace
Job Number: 12751

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS	
Highway Data		***Site Conditions (Hard = 10, Soft = 15)***	
Average Daily Traffic (Adt):	31,238 vehicles	*Autos:*	15
Peak Hour Percentage:	10%	*Medium Trucks (2 Axles):*	15
Peak Hour Volume:	3,124 vehicles	*Heavy Trucks (3+ Axles):*	15
Vehicle Speed:	45 mph		
Near/Far Lane Distance:	76 feet		

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Site Data		***Noise Source Elevations (in feet)***			
Barrier Height:	**0.0 feet**	*Autos:*	0.000		
Barrier Type (0-Wall, 1-Berm):	0.0	*Medium Trucks:*	2.297		
Centerline Dist. to Barrier:	65.0 feet	*Heavy Trucks:*	8.006	*Grade Adjustment:*	0.0
Centerline Dist. to Observer:	65.0 feet				
Barrier Distance to Observer:	0.0 feet				
Observer Height (Above Pad):	5.0 feet				
Pad Elevation:	0.0 feet				
Road Elevation:	0.0 feet				
Road Grade:	0.0%				
Left View:	-90.0 degrees				
Right View:	90.0 degrees				

Lane Equivalent Distance (in feet)

Autos:	52.972
Medium Trucks:	52.804
Heavy Trucks:	52.821

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	3.00	-0.48	-1.20	*-4.70*	0.000	0.000
Medium Trucks:	79.45	-14.24	-0.46	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-18.20	-0.46	-1.20	*-5.30*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.8	67.9	66.1	60.1	68.7	69.3
Medium Trucks:	63.5	62.0	55.7	54.1	62.6	62.8
Heavy Trucks:	64.4	63.0	53.9	55.2	63.5	63.7
Vehicle Noise:	71.6	69.9	66.7	62.0	70.6	71.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	71	153	330	712
CNEL:	76	164	354	763

Friday, November 22, 2019

APPENDIX 7.2:

OFF-SITE SOIL IMPORT/EXPORT HAUL TRUCK CONSTRUCTION ANALYSIS

This page intentionally left blank

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Without Project Haul Trips
Road Name: I-15 Freeway
Lot No: 20225 Bedford Canyon Rd.

Project Name: Soil Import/Export
Job Number: 12751
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	164,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	16,400 vehicles
Vehicle Speed:	65 mph
Near/Far Lane Distance:	142 feet

Site Data

Barrier Height:	**16.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	93.0 feet
Centerline Dist. to Observer:	162.0 feet
Barrier Distance to Observer:	69.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	928.0 feet
Road Elevation:	922.0 feet
Barrier Elevation:	922.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	75.5%	14.0%	10.5%	94.39%
Medium Trucks:	48.9%	2.2%	48.9%	1.95%
Heavy Trucks:	47.3%	5.4%	47.3%	3.66%

Noise Source Elevations (in feet)

Autos:	922.000		
Medium Trucks:	924.297		
Heavy Trucks:	930.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	131.342
Medium Trucks:	130.791
Heavy Trucks:	129.777

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	75.54	8.46	-6.39	-1.20	*1.15*	-10.600	-13.600
Medium Trucks:	81.71	-8.39	-6.37	-1.20	*0.93*	-10.090	-13.090
Heavy Trucks:	85.21	-5.65	-6.32	-1.20	*0.49*	-8.450	-11.450

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	76.4	74.4	73.1	67.1	75.5	76.1
Medium Trucks:	65.8	61.9	54.4	63.1	69.3	69.3
Heavy Trucks:	72.0	68.0	64.6	69.2	75.4	75.5
Vehicle Noise:	78.0	75.5	73.7	71.9	79.0	79.3

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.8	63.8	62.5	56.5	64.9	65.5
Medium Trucks:	55.7	51.8	44.3	53.0	59.2	59.2
Heavy Trucks:	63.6	59.5	56.2	60.8	67.0	67.1
Vehicle Noise:	68.1	65.4	63.4	62.7	69.5	69.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Without Project Haul Trips
Road Name: Magnolia Ave.
Lot No: 1295 Magnolia Ave.

Project Name: Soil Import/Export
Job Number: 12751
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,000 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	82.0 feet
Centerline Dist. to Observer:	82.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	73.348
Medium Trucks:	73.228
Heavy Trucks:	73.240

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	4.07	-2.60	-1.20	*-4.74*	0.000	0.000
Medium Trucks:	77.62	-13.17	-2.59	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.14	-17.12	-2.59	-1.20	*-5.22*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	69.6	67.6	66.3	60.3	68.7	69.3
Medium Trucks:	60.7	56.8	49.3	58.0	64.2	64.2
Heavy Trucks:	61.2	57.2	53.8	58.4	64.6	64.7
Vehicle Noise:	70.7	68.3	66.6	63.8	71.1	71.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	69.6	67.6	66.3	60.3	68.7	69.3
Medium Trucks:	60.7	56.8	49.3	58.0	64.2	64.2
Heavy Trucks:	61.2	57.2	53.8	58.4	64.6	64.7
Vehicle Noise:	70.7	68.3	66.6	63.8	71.1	71.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Without Project Haul Trips
Road Name: Sherborn St.
Lot No: 1168 Sherborn St.

Project Name: Soil Import/Export
Job Number: 12751
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	790 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	130.0 feet
Centerline Dist. to Observer:	130.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	129.958
Medium Trucks:	129.890
Heavy Trucks:	129.896

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-1.88	-6.33	-1.20	*-4.80*	0.000	0.000
Medium Trucks:	74.83	-19.12	-6.32	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	80.05	-23.08	-6.32	-1.20	*-5.10*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	55.7	53.7	52.4	46.4	54.8	55.4
Medium Trucks:	48.2	44.3	36.8	45.5	51.7	51.7
Heavy Trucks:	49.4	45.4	42.0	46.7	52.9	52.9
Vehicle Noise:	57.2	54.7	52.9	51.0	58.1	58.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	55.7	53.7	52.4	46.4	54.8	55.4
Medium Trucks:	48.2	44.3	36.8	45.5	51.7	51.7
Heavy Trucks:	49.4	45.4	42.0	46.7	52.9	52.9
Vehicle Noise:	57.2	54.7	52.9	51.0	58.1	58.4

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: With Project Haul Trips
Road Name: I-15 Freeway
Lot No: 20225 Bedford Canyon Rd.

Project Name: Soil Import/Export
Job Number: 12751
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	164,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	16,450 vehicles
Vehicle Speed:	65 mph
Near/Far Lane Distance:	142 feet

Site Data

Barrier Height:	**16.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	93.0 feet
Centerline Dist. to Observer:	162.0 feet
Barrier Distance to Observer:	69.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	928.0 feet
Road Elevation:	922.0 feet
Barrier Elevation:	922.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	75.5%	14.0%	10.5%	94.10%
Medium Trucks:	48.9%	2.2%	48.9%	1.94%
Heavy Trucks:	47.3%	5.4%	47.3%	3.95%

Noise Source Elevations (in feet)

Autos:	922.000		
Medium Trucks:	924.297		
Heavy Trucks:	930.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	131.342
Medium Trucks:	130.791
Heavy Trucks:	129.777

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	75.54	8.46	-6.39	-1.20	*1.15*	-10.600	-13.600
Medium Trucks:	81.71	-8.39	-6.37	-1.20	*0.93*	-10.090	-13.090
Heavy Trucks:	85.21	-5.31	-6.32	-1.20	*0.49*	-8.450	-11.450

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	76.4	74.4	73.1	67.1	75.5	76.1
Medium Trucks:	65.7	61.9	54.3	63.1	69.3	69.3
Heavy Trucks:	72.4	68.3	64.9	69.6	75.8	75.9
Vehicle Noise:	78.1	75.6	73.8	72.1	79.1	79.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.8	63.8	62.5	56.5	64.9	65.5
Medium Trucks:	55.7	51.8	44.3	53.0	59.2	59.2
Heavy Trucks:	63.9	59.9	56.5	61.1	67.3	67.4
Vehicle Noise:	68.2	65.5	63.5	62.9	69.7	70.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: With Project Haul Trips
Road Name: Magnolia Ave.
Lot No: 1295 Magnolia Ave.

Project Name: Soil Import/Export
Job Number: 12751
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,050 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	82.0 feet
Centerline Dist. to Observer:	82.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	75.5%	14.0%	10.5%	96.22%
Medium Trucks:	48.9%	2.2%	48.9%	1.82%
Heavy Trucks:	47.3%	5.4%	47.3%	1.97%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	73.348
Medium Trucks:	73.228
Heavy Trucks:	73.240

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	4.07	-2.60	-1.20	*-4.74*	0.000	0.000
Medium Trucks:	77.62	-13.16	-2.59	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.14	-12.82	-2.59	-1.20	*-5.22*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	69.6	67.6	66.3	60.3	68.7	69.3
Medium Trucks:	60.7	56.8	49.3	58.0	64.2	64.2
Heavy Trucks:	65.5	61.5	58.1	62.7	68.9	69.0
Vehicle Noise:	71.4	68.8	67.0	65.5	72.5	72.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	69.6	67.6	66.3	60.3	68.7	69.3
Medium Trucks:	60.7	56.8	49.3	58.0	64.2	64.2
Heavy Trucks:	65.5	61.5	58.1	62.7	68.9	69.0
Vehicle Noise:	71.4	68.8	67.0	65.5	72.5	72.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: With Project Haul Trips
Road Name: Sherborn St.
Lot No: 1168 Sherborn St.

Project Name: Soil Import/Export
Job Number: 12751
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	840 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	130.0 feet
Centerline Dist. to Observer:	130.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	75.5%	14.0%	10.5%	91.62%
Medium Trucks:	48.9%	2.2%	48.9%	1.73%
Heavy Trucks:	47.3%	5.4%	47.3%	6.65%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	129.958
Medium Trucks:	129.890
Heavy Trucks:	129.896

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-1.88	-6.33	-1.20	*-4.80*	0.000	0.000
Medium Trucks:	74.83	-19.12	-6.32	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	80.05	-13.28	-6.32	-1.20	*-5.10*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	55.7	53.7	52.4	46.4	54.8	55.4
Medium Trucks:	48.2	44.3	36.8	45.5	51.7	51.7
Heavy Trucks:	59.2	55.2	51.8	56.5	62.7	62.7
Vehicle Noise:	61.1	57.7	55.2	57.2	63.6	63.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	55.7	53.7	52.4	46.4	54.8	55.4
Medium Trucks:	48.2	44.3	36.8	45.5	51.7	51.7
Heavy Trucks:	59.2	55.2	51.8	56.5	62.7	62.7
Vehicle Noise:	61.1	57.7	55.2	57.2	63.6	63.8

APPENDIX 8.1:

ON-SITE TRAFFIC NOISE ANALYSIS

This page intentionally left blank

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Backyard With Wall
Road Name: I-15 Freeway s/o Cajalco Rd.
Lot No: Hotel Pool Area

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	198,280 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	19,828 vehicles
Vehicle Speed:	65 mph
Near/Far Lane Distance:	142 feet

Site Data

Barrier Height:	**45.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	378.0 feet
Centerline Dist. to Observer:	452.0 feet
Barrier Distance to Observer:	74.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	919.2 feet
Road Elevation:	892.0 feet
Barrier Elevation:	919.2 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.39%
Medium Trucks:	84.8%	4.9%	10.3%	1.95%
Heavy Trucks:	86.5%	2.7%	10.8%	3.66%

Noise Source Elevations (in feet)

Autos:	892.000		
Medium Trucks:	894.297		
Heavy Trucks:	900.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	462.346
Medium Trucks:	461.914
Heavy Trucks:	460.900

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	75.54	9.29	-14.59	-1.20	*15.47*	-17.756	-20.756
Medium Trucks:	81.71	-7.56	-14.59	-1.20	*15.20*	-17.724	-20.724
Heavy Trucks:	85.21	-4.83	-14.57	-1.20	*14.56*	-17.647	-20.647

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	69.0	67.1	65.4	59.3	67.9	68.5
Medium Trucks:	58.4	56.9	50.5	48.9	57.4	57.6
Heavy Trucks:	64.6	63.2	54.2	55.4	63.8	63.9
Vehicle Noise:	70.6	68.9	65.8	61.1	69.6	70.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	51.3	49.4	47.6	41.6	50.2	50.8
Medium Trucks:	40.6	39.1	32.8	31.2	39.7	39.9
Heavy Trucks:	47.0	45.5	36.5	37.8	46.1	46.2
Vehicle Noise:	52.9	51.2	48.1	43.3	51.9	52.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: First Floor With Wall
Road Name: I-15 Freeway s/o Cajalco Rd.
Lot No: Hotel

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	198,280 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	19,828 vehicles
Vehicle Speed:	65 mph
Near/Far Lane Distance:	142 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	295.0 feet
Centerline Dist. to Observer:	378.0 feet
Barrier Distance to Observer:	83.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	919.2 feet
Road Elevation:	892.0 feet
Barrier Elevation:	919.2 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.39%
Medium Trucks:	84.8%	4.9%	10.3%	1.95%
Heavy Trucks:	86.5%	2.7%	10.8%	3.66%

Noise Source Elevations (in feet)

Autos:	892.000		
Medium Trucks:	894.297		
Heavy Trucks:	900.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	370.768
Medium Trucks:	370.560
Heavy Trucks:	370.122

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	75.54	9.29	-13.16	-1.20	*0.03*	-5.300	-8.300
Medium Trucks:	81.71	-7.56	-13.15	-1.20	*0.02*	-5.200	-8.200
Heavy Trucks:	85.21	-4.83	-13.14	-1.20	*0.00*	-4.900	-7.900

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	70.5	68.6	66.8	60.8	69.4	70.0
Medium Trucks:	59.8	58.3	51.9	50.4	58.8	59.1
Heavy Trucks:	66.0	64.6	55.6	56.8	65.2	65.3
Vehicle Noise:	72.1	70.3	67.3	62.5	71.0	71.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.2	63.3	61.5	55.5	64.1	64.7
Medium Trucks:	54.6	53.1	46.7	45.2	53.6	53.9
Heavy Trucks:	61.1	59.7	50.7	51.9	60.3	60.4
Vehicle Noise:	66.9	65.1	62.0	57.3	65.9	66.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Second Floor With Wall
Road Name: I-15 Freeway s/o Cajalco Rd.
Lot No: Hotel

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	198,280	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	19,828	vehicles
Vehicle Speed:	65	mph
Near/Far Lane Distance:	142	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	295.0	feet
Centerline Dist. to Observer:	378.0	feet
Barrier Distance to Observer:	83.0	feet
Observer Height (Above Pad):	15.0	feet
Pad Elevation:	919.2	feet
Road Elevation:	892.0	feet
Barrier Elevation:	919.2	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.39%
Medium Trucks:	84.8%	4.9%	10.3%	1.95%
Heavy Trucks:	86.5%	2.7%	10.8%	3.66%

Noise Source Elevations (in feet)

Autos:	892.000		
Medium Trucks:	894.297		
Heavy Trucks:	900.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	373.663
Medium Trucks:	373.410
Heavy Trucks:	372.843

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	75.54	9.29	-13.21	-1.20	*-0.24*	0.000	0.000
Medium Trucks:	81.71	-7.56	-13.20	-1.20	*-0.29*	0.000	0.000
Heavy Trucks:	85.21	-4.83	-13.19	-1.20	*-0.42*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	70.4	68.5	66.8	60.7	69.3	69.9
Medium Trucks:	59.7	58.2	51.9	50.3	58.8	59.0
Heavy Trucks:	66.0	64.6	55.5	56.8	65.1	65.3
Vehicle Noise:	72.0	70.3	67.2	62.5	71.0	71.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	70.4	68.5	66.8	60.7	69.3	69.9
Medium Trucks:	59.7	58.2	51.9	50.3	58.8	59.0
Heavy Trucks:	66.0	64.6	55.5	56.8	65.1	65.3
Vehicle Noise:	72.0	70.3	67.2	62.5	71.0	71.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Third Floor With Wall
Road Name: I-15 Freeway s/o Cajalco Rd.
Lot No: Hotel

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	198,280 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	19,828 vehicles
Vehicle Speed:	65 mph
Near/Far Lane Distance:	142 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	295.0 feet
Centerline Dist. to Observer:	378.0 feet
Barrier Distance to Observer:	83.0 feet
Observer Height (Above Pad):	25.0 feet
Pad Elevation:	919.2 feet
Road Elevation:	892.0 feet
Barrier Elevation:	919.2 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.39%
Medium Trucks:	84.8%	4.9%	10.3%	1.95%
Heavy Trucks:	86.5%	2.7%	10.8%	3.66%

Noise Source Elevations (in feet)

Autos:	892.000		
Medium Trucks:	894.297		
Heavy Trucks:	900.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	374.924
Medium Trucks:	374.611
Heavy Trucks:	373.893

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	75.54	9.29	-13.23	-1.20	*-1.32*	0.000	0.000
Medium Trucks:	81.71	-7.56	-13.22	-1.20	*-1.42*	0.000	0.000
Heavy Trucks:	85.21	-4.83	-13.21	-1.20	*-1.69*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	70.4	68.5	66.7	60.7	69.3	69.9
Medium Trucks:	59.7	58.2	51.9	50.3	58.8	59.0
Heavy Trucks:	66.0	64.5	55.5	56.8	65.1	65.2
Vehicle Noise:	72.0	70.3	67.2	62.4	71.0	71.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	70.4	68.5	66.7	60.7	69.3	69.9
Medium Trucks:	59.7	58.2	51.9	50.3	58.8	59.0
Heavy Trucks:	66.0	64.5	55.5	56.8	65.1	65.2
Vehicle Noise:	72.0	70.3	67.2	62.4	71.0	71.4

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario: Fourth Floor With Wall
Road Name: I-15 Freeway s/o Cajalco Rd.
Lot No: Hotel

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	198,280	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	19,828	vehicles
Vehicle Speed:	65	mph
Near/Far Lane Distance:	142	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	295.0	feet
Centerline Dist. to Observer:	378.0	feet
Barrier Distance to Observer:	83.0	feet
Observer Height (Above Pad):	35.0	feet
Pad Elevation:	919.2	feet
Road Elevation:	892.0	feet
Barrier Elevation:	919.2	feet
Road Grade:	0.0%	

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.39%
Medium Trucks:	84.8%	4.9%	10.3%	1.95%
Heavy Trucks:	86.5%	2.7%	10.8%	3.66%

Noise Source Elevations (in feet)

Autos:	892.000		
Medium Trucks:	894.297		
Heavy Trucks:	900.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	376.446
Medium Trucks:	376.074
Heavy Trucks:	375.207

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	75.54	9.29	-13.25	-1.20	*-3.18*	0.000	0.000
Medium Trucks:	81.71	-7.56	-13.25	-1.20	*-3.34*	0.000	0.000
Heavy Trucks:	85.21	-4.83	-13.23	-1.20	*-3.75*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	70.4	68.5	66.7	60.7	69.3	69.9
Medium Trucks:	59.7	58.2	51.8	50.3	58.7	59.0
Heavy Trucks:	65.9	64.5	55.5	56.7	65.1	65.2
Vehicle Noise:	72.0	70.2	67.2	62.4	71.0	71.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	70.4	68.5	66.7	60.7	69.3	69.9
Medium Trucks:	59.7	58.2	51.8	50.3	58.7	59.0
Heavy Trucks:	65.9	64.5	55.5	56.7	65.1	65.2
Vehicle Noise:	72.0	70.2	67.2	62.4	71.0	71.4

This page intentionally left blank

APPENDIX 10.1:

OPERATIONAL NOISE LEVEL CALCULATIONS

This page intentionally left blank

STATIONARY SOURCE NOISE PREDICTION MODEL 11/24/2019

Observer Location: **R1**
Source: Air Conditioning Unit (Roof-Top)
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	455.0 feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	445.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	995.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	952.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	995.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	77.2	74.4	76.1	77.4	77.7	78.2
Distance Attenuation	455.0	-39.2	-39.2	-39.2	-39.2	-39.2	-39.2
Shielding (Barrier Attenuation)	445.0	-6.7	-6.7	-6.7	-6.7	-6.7	-6.7
Raw (Distance + Barrier)		31.3	28.5	30.2	31.5	31.8	32.3
60 Minute Hourly Adjustment		**31.3**	**28.5**	**30.2**	**31.5**	**31.8**	**32.3**

STATIONARY SOURCE NOISE PREDICTION MODEL 11/24/2019

Observer Location: **R1**
Source: Drive-Through Speakerphone
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	751.0 feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	741.0 feet	*Noise Source Height:*	3.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	995.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	929.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	995.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	15.0	62.0	60.9	62.1	63.6	65.3	66.4
Distance Attenuation	751.0	-34.0	-34.0	-34.0	-34.0	-34.0	-34.0
Shielding (Barrier Attenuation)	741.0	-6.6	-6.6	-6.6	-6.6	-6.6	-6.6
Raw (Distance + Barrier)		21.4	20.3	21.5	23.0	24.7	25.8
60 Minute Hourly Adjustment		**21.4**	**20.3**	**21.5**	**23.0**	**24.7**	**25.8**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R1**
Source: Trash Enclosure
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	527.0 feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	517.0 feet	*Noise Source Height:*	4.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	995.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	932.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	995.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	77.3	69.0	75.0	82.0	87.0	88.5
Distance Attenuation	527.0	-40.5	-40.5	-40.5	-40.5	-40.5	-40.5
Shielding (Barrier Attenuation)	517.0	-7.1	-7.1	-7.1	-7.1	-7.1	-7.1
Raw (Distance + Barrier)		29.7	21.4	27.4	34.4	39.4	40.9
20 Minute Hourly Adjustment		**24.9**	**16.6**	**22.6**	**29.6**	**34.6**	**36.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R1**
Source: Parking Lot
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	584.0 feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	574.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	995.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	931.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	995.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	60.1	56.7	60.7	63.7	67.1	79.5
Distance Attenuation	584.0	-41.3	-41.3	-41.3	-41.3	-41.3	-41.3
Shielding (Barrier Attenuation)	574.0	-6.9	-6.9	-6.9	-6.9	-6.9	-6.9
Raw (Distance + Barrier)		11.9	8.5	12.5	15.5	18.9	31.3
60 Minute Hourly Adjustment		**11.9**	**8.5**	**12.5**	**15.5**	**18.9**	**31.3**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R1**
Source: Gas Station Activity
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	601.0 feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	591.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	995.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	931.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	995.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	68.2	65.6	66.9	69.5	74.4	82.4
Distance Attenuation	601.0	-41.6	-41.6	-41.6	-41.6	-41.6	-41.6
Shielding (Barrier Attenuation)	591.0	-6.9	-6.9	-6.9	-6.9	-6.9	-6.9
Raw (Distance + Barrier)		19.7	17.1	18.4	21.0	25.9	33.9
60 Minute Hourly Adjustment		**19.7**	**17.1**	**18.4**	**21.0**	**25.9**	**33.9**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R1**
Source: Car Wash Tunnel
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	585.0 feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	575.0 feet	*Noise Source Height:*	8.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	995.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	931.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	995.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	10.0	88.3	81.6	92.0	92.6	93.3	93.8
Distance Attenuation	585.0	-35.3	-35.3	-35.3	-35.3	-35.3	-35.3
Shielding (Barrier Attenuation)	575.0	-6.9	-6.9	-6.9	-6.9	-6.9	-6.9
Raw (Distance + Barrier)		46.1	39.4	49.8	50.4	51.1	51.6
60 Minute Hourly Adjustment		**46.1**	**39.4**	**49.8**	**50.4**	**51.1**	**51.6**

STATIONARY SOURCE NOISE PREDICTION MODEL 11/24/2019

Observer Location: **R1**
Source: Car Wash Vacuum Activity
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	618.0 feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	608.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	995.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	931.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	995.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	74.6	74.2	75.4	77.2	78.0	78.8
Distance Attenuation	618.0	-41.8	-41.8	-41.8	-41.8	-41.8	-41.8
Shielding (Barrier Attenuation)	608.0	-6.8	-6.8	-6.8	-6.8	-6.8	-6.8
Raw (Distance + Barrier)		26.0	25.6	26.8	28.6	29.4	30.2
60 Minute Hourly Adjustment		**26.0**	**25.6**	**26.8**	**28.6**	**29.4**	**30.2**

STATIONARY SOURCE NOISE PREDICTION MODEL 11/24/2019

Observer Location: **R1**
Source: Outdoor Playground
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	751.0 feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	741.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	995.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	923.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	995.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	63.4	61.7	64.1	67.0	69.7	73.9
Distance Attenuation	751.0	-43.5	-43.5	-43.5	-43.5	-43.5	-43.5
Shielding (Barrier Attenuation)	741.0	-6.7	-6.7	-6.7	-6.7	-6.7	-6.7
Raw (Distance + Barrier)		13.2	11.5	13.9	16.8	19.5	23.7
60 Minute Hourly Adjustment		**13.2**	**11.5**	**13.9**	**16.8**	**19.5**	**23.7**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R2**
Source: Air Conditioning Unit (Roof-Top)
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	1,815.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	1,815.0	feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	983.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	963.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	983.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	77.2	74.4	76.1	77.4	77.7	78.2
Distance Attenuation	1,815.0	-51.2	-51.2	-51.2	-51.2	-51.2	-51.2
Shielding (Barrier Attenuation)	1,815.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		26.0	23.2	24.9	26.2	26.5	27.0
60 Minute Hourly Adjustment		**26.0**	**23.2**	**24.9**	**26.2**	**26.5**	**27.0**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R2**
Source: Drive-Through Speakerphone
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	2,777.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	2,777.0	feet	*Noise Source Height:*	3.0 feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	983.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	929.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	983.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	15.0	62.0	60.9	62.1	63.6	65.3	66.4
Distance Attenuation	2,777.0	-45.3	-45.3	-45.3	-45.3	-45.3	-45.3
Shielding (Barrier Attenuation)	2,777.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		16.7	15.6	16.8	18.3	20.0	21.1
60 Minute Hourly Adjustment		**16.7**	**15.6**	**16.8**	**18.3**	**20.0**	**21.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R2**
Source: Trash Enclosure
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	1,910.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	1,910.0	feet	*Noise Source Height:*	4.0 feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	983.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	921.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	983.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	77.3	69.0	75.0	82.0	87.0	88.5
Distance Attenuation	1,910.0	-51.6	-51.6	-51.6	-51.6	-51.6	-51.6
Shielding (Barrier Attenuation)	1,910.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		25.7	17.4	23.4	30.4	35.4	36.9
20 Minute Hourly Adjustment		**20.9**	**12.6**	**18.6**	**25.6**	**30.6**	**32.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R2**
Source: Parking Lot
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	1,775.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	1,775.0	feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	983.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	918.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	983.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	60.1	56.7	60.7	63.7	67.1	79.5
Distance Attenuation	1,775.0	-51.0	-51.0	-51.0	-51.0	-51.0	-51.0
Shielding (Barrier Attenuation)	1,775.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		9.1	5.7	9.7	12.7	16.1	28.5
60 Minute Hourly Adjustment		**9.1**	**5.7**	**9.7**	**12.7**	**16.1**	**28.5**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R2**
Source: Gas Station Activity
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	2,940.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	2,940.0	feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	983.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	931.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	983.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	68.2	65.6	66.9	69.5	74.4	82.4
Distance Attenuation	2,940.0	-55.4	-55.4	-55.4	-55.4	-55.4	-55.4
Shielding (Barrier Attenuation)	2,940.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		12.8	10.2	11.5	14.1	19.0	27.0
60 Minute Hourly Adjustment		**12.8**	**10.2**	**11.5**	**14.1**	**19.0**	**27.0**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R2**
Source: Car Wash Tunnel
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	3,108.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	3,108.0	feet	*Noise Source Height:*	8.0 feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	983.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	932.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	983.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	10.0	88.3	81.6	92.0	92.6	93.3	93.8
Distance Attenuation	3,108.0	-49.8	-49.8	-49.8	-49.8	-49.8	-49.8
Shielding (Barrier Attenuation)	3,108.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		38.5	31.8	42.2	42.8	43.5	44.0
60 Minute Hourly Adjustment		**38.5**	**31.8**	**42.2**	**42.8**	**43.5**	**44.0**

STATIONARY SOURCE NOISE PREDICTION MODEL 11/24/2019

Observer Location: **R2**
Source: Car Wash Vacuum Activity
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	2,878.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	2,878.0	feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	983.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	932.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	983.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	74.6	74.2	75.4	77.2	78.0	78.8
Distance Attenuation	2,878.0	-55.2	-55.2	-55.2	-55.2	-55.2	-55.2
Shielding (Barrier Attenuation)	2,878.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		19.4	19.0	20.2	22.0	22.8	23.6
60 Minute Hourly Adjustment		**19.4**	**19.0**	**20.2**	**22.0**	**22.8**	**23.6**

STATIONARY SOURCE NOISE PREDICTION MODEL 11/24/2019

Observer Location: **R2**
Source: Outdoor Playground
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	1,877.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	1,877.0	feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	983.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	924.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	983.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	63.4	61.7	64.1	67.0	69.7	73.9
Distance Attenuation	1,877.0	-51.5	-51.5	-51.5	-51.5	-51.5	-51.5
Shielding (Barrier Attenuation)	1,877.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		11.9	10.2	12.6	15.5	18.2	22.4
60 Minute Hourly Adjustment		**11.9**	**10.2**	**12.6**	**15.5**	**18.2**	**22.4**

STATIONARY SOURCE NOISE PREDICTION MODEL 11/24/2019

Observer Location: **R3**
Source: Air Conditioning Unit (Roof-Top)
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	1,896.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	1,896.0	feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	1,088.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	943.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	1,088.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	77.2	74.4	76.1	77.4	77.7	78.2
Distance Attenuation	1,896.0	-51.6	-51.6	-51.6	-51.6	-51.6	-51.6
Shielding (Barrier Attenuation)	1,896.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		25.6	22.8	24.5	25.8	26.1	26.6
60 Minute Hourly Adjustment		**25.6**	**22.8**	**24.5**	**25.8**	**26.1**	**26.6**

STATIONARY SOURCE NOISE PREDICTION MODEL 11/24/2019

Observer Location: **R3**
Source: Drive-Through Speakerphone
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	2,604.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	2,604.0	feet	*Noise Source Height:*	3.0 feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	1,088.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	929.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	1,088.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	15.0	62.0	60.9	62.1	63.6	65.3	66.4
Distance Attenuation	2,604.0	-44.8	-44.8	-44.8	-44.8	-44.8	-44.8
Shielding (Barrier Attenuation)	2,604.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		17.2	16.1	17.3	18.8	20.5	21.6
60 Minute Hourly Adjustment		**17.2**	**16.1**	**17.3**	**18.8**	**20.5**	**21.6**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R3**
Source: Trash Enclosure
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	1,847.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	1,847.0	feet	*Noise Source Height:*	4.0 feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	1,088.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	923.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	1,088.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	77.3	69.0	75.0	82.0	87.0	88.5
Distance Attenuation	1,847.0	-51.3	-51.3	-51.3	-51.3	-51.3	-51.3
Shielding (Barrier Attenuation)	1,847.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		26.0	17.7	23.7	30.7	35.7	37.2
20 Minute Hourly Adjustment		**21.2**	**12.9**	**18.9**	**25.9**	**30.9**	**32.4**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R3**
Source: Parking Lot
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	1,834.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	1,834.0	feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	1,088.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	923.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	1,088.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	60.1	56.7	60.7	63.7	67.1	79.5
Distance Attenuation	1,834.0	-51.3	-51.3	-51.3	-51.3	-51.3	-51.3
Shielding (Barrier Attenuation)	1,834.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		8.8	5.4	9.4	12.4	15.8	28.2
60 Minute Hourly Adjustment		**8.8**	**5.4**	**9.4**	**12.4**	**15.8**	**28.2**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R3**
Source: Gas Station Activity
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	2,772.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	2,772.0	feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	1,088.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	931.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	1,088.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	68.2	65.6	66.9	69.5	74.4	82.4
Distance Attenuation	2,772.0	-54.9	-54.9	-54.9	-54.9	-54.9	-54.9
Shielding (Barrier Attenuation)	2,772.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		13.3	10.7	12.0	14.6	19.5	27.5
60 Minute Hourly Adjustment		**13.3**	**10.7**	**12.0**	**14.6**	**19.5**	**27.5**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R3**
Source: Car Wash Tunnel
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	2,876.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	2,876.0	feet	*Noise Source Height:*	8.0 feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	1,088.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	931.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	1,088.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	10.0	88.3	81.6	92.0	92.6	93.3	93.8
Distance Attenuation	2,876.0	-49.2	-49.2	-49.2	-49.2	-49.2	-49.2
Shielding (Barrier Attenuation)	2,876.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		39.1	32.4	42.8	43.4	44.1	44.6
60 Minute Hourly Adjustment		**39.1**	**32.4**	**42.8**	**43.4**	**44.1**	**44.6**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R3**
Source: Car Wash Vacuum Activity
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	2,752.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	2,752.0	feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	1,088.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	931.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	1,088.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	74.6	74.2	75.4	77.2	78.0	78.8
Distance Attenuation	2,752.0	-54.8	-54.8	-54.8	-54.8	-54.8	-54.8
Shielding (Barrier Attenuation)	2,752.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		19.8	19.4	20.6	22.4	23.2	24.0
60 Minute Hourly Adjustment		**19.8**	**19.4**	**20.6**	**22.4**	**23.2**	**24.0**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R3**
Source: Outdoor Playground
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	1,743.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	1,743.0	feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	1,088.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	923.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	1,088.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	63.4	61.7	64.1	67.0	69.7	73.9
Distance Attenuation	1,743.0	-50.8	-50.8	-50.8	-50.8	-50.8	-50.8
Shielding (Barrier Attenuation)	1,743.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		12.6	10.9	13.3	16.2	18.9	23.1
60 Minute Hourly Adjustment		**12.6**	**10.9**	**13.3**	**16.2**	**18.9**	**23.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R4**
Source: Air Conditioning Unit (Roof-Top)
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	1,240.0	feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	1,230.0	feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	10.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	1,028.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	949.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	1,028.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	77.2	74.4	76.1	77.4	77.7	78.2
Distance Attenuation	1,240.0	-47.9	-47.9	-47.9	-47.9	-47.9	-47.9
Shielding (Barrier Attenuation)	1,230.0	-6.2	-6.2	-6.2	-6.2	-6.2	-6.2
Raw (Distance + Barrier)		23.1	20.3	22.0	23.3	23.6	24.1
60 Minute Hourly Adjustment		**23.1**	**20.3**	**22.0**	**23.3**	**23.6**	**24.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R4**
Source: Drive-Through Speakerphone
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	1,254.0	feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	1,244.0	feet	*Noise Source Height:*	3.0 feet
Barrier Distance to Observer:	10.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	1,028.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	929.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	1,028.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	15.0	62.0	60.9	62.1	63.6	65.3	66.4
Distance Attenuation	1,254.0	-38.4	-38.4	-38.4	-38.4	-38.4	-38.4
Shielding (Barrier Attenuation)	1,244.0	-6.5	-6.5	-6.5	-6.5	-6.5	-6.5
Raw (Distance + Barrier)		17.1	16.0	17.2	18.7	20.4	21.5
60 Minute Hourly Adjustment		**17.1**	**16.0**	**17.2**	**18.7**	**20.4**	**21.5**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R4**
Source: Trash Enclosure
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	1,261.0 feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	1,251.0 feet	*Noise Source Height:*	4.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	1,028.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	928.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	1,028.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	77.3	69.0	75.0	82.0	87.0	88.5
Distance Attenuation	1,261.0	-48.0	-48.0	-48.0	-48.0	-48.0	-48.0
Shielding (Barrier Attenuation)	1,251.0	-6.5	-6.5	-6.5	-6.5	-6.5	-6.5
Raw (Distance + Barrier)		22.8	14.5	20.5	27.5	32.5	34.0
20 Minute Hourly Adjustment		**18.0**	**9.7**	**15.7**	**22.7**	**27.7**	**29.2**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R4**
Source: Parking Lot
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	1,158.0 feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	1,148.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	1,028.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	929.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	1,028.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	60.1	56.7	60.7	63.7	67.1	79.5
Distance Attenuation	1,158.0	-47.3	-47.3	-47.3	-47.3	-47.3	-47.3
Shielding (Barrier Attenuation)	1,148.0	-6.6	-6.6	-6.6	-6.6	-6.6	-6.6
Raw (Distance + Barrier)		6.2	2.8	6.8	9.8	13.2	25.6
60 Minute Hourly Adjustment		**6.2**	**2.8**	**6.8**	**9.8**	**13.2**	**25.6**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R4**
Source: Gas Station Activity
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	1,218.0	feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	1,208.0	feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	10.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	1,028.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	929.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	1,028.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	68.2	65.6	66.9	69.5	74.4	82.4
Distance Attenuation	1,218.0	-47.7	-47.7	-47.7	-47.7	-47.7	-47.7
Shielding (Barrier Attenuation)	1,208.0	-6.5	-6.5	-6.5	-6.5	-6.5	-6.5
Raw (Distance + Barrier)		14.0	11.4	12.7	15.3	20.2	28.2
60 Minute Hourly Adjustment		**14.0**	**11.4**	**12.7**	**15.3**	**20.2**	**28.2**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R4**
Source: Car Wash Tunnel
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	1,313.0	feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	1,303.0	feet	*Noise Source Height:*	8.0 feet
Barrier Distance to Observer:	10.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	1,028.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	931.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	1,028.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	10.0	88.3	81.6	92.0	92.6	93.3	93.8
Distance Attenuation	1,313.0	-42.4	-42.4	-42.4	-42.4	-42.4	-42.4
Shielding (Barrier Attenuation)	1,303.0	-6.3	-6.3	-6.3	-6.3	-6.3	-6.3
Raw (Distance + Barrier)		39.6	32.9	43.3	43.9	44.6	45.1
60 Minute Hourly Adjustment		**39.6**	**32.9**	**43.3**	**43.9**	**44.6**	**45.1**

STATIONARY SOURCE NOISE PREDICTION MODEL 11/24/2019

Observer Location: **R4**
Source: Car Wash Vacuum Activity
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	1,368.0 feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	1,358.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	1,028.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	931.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	1,028.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	74.6	74.2	75.4	77.2	78.0	78.8
Distance Attenuation	1,368.0	-48.7	-48.7	-48.7	-48.7	-48.7	-48.7
Shielding (Barrier Attenuation)	1,358.0	-6.3	-6.3	-6.3	-6.3	-6.3	-6.3
Raw (Distance + Barrier)		19.6	19.2	20.4	22.2	23.0	23.8
60 Minute Hourly Adjustment		**19.6**	**19.2**	**20.4**	**22.2**	**23.0**	**23.8**

STATIONARY SOURCE NOISE PREDICTION MODEL 11/24/2019

Observer Location: **R4**
Source: Outdoor Playground
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	1,754.0 feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	1,744.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	1,028.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	923.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	1,028.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	63.4	61.7	64.1	67.0	69.7	73.9
Distance Attenuation	1,754.0	-50.9	-50.9	-50.9	-50.9	-50.9	-50.9
Shielding (Barrier Attenuation)	1,744.0	-6.2	-6.2	-6.2	-6.2	-6.2	-6.2
Raw (Distance + Barrier)		6.3	4.6	7.0	9.9	12.6	16.8
60 Minute Hourly Adjustment		**6.3**	**4.6**	**7.0**	**9.9**	**12.6**	**16.8**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R5**
Source: Air Conditioning Unit (Roof-Top)
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	1,637.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	1,637.0	feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	976.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	944.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	976.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	77.2	74.4	76.1	77.4	77.7	78.2
Distance Attenuation	1,637.0	-50.3	-50.3	-50.3	-50.3	-50.3	-50.3
Shielding (Barrier Attenuation)	1,637.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		26.9	24.1	25.8	27.1	27.4	27.9
60 Minute Hourly Adjustment		**26.9**	**24.1**	**25.8**	**27.1**	**27.4**	**27.9**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R5**
Source: Drive-Through Speakerphone
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	1,961.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	1,961.0	feet	*Noise Source Height:*	3.0 feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	976.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	929.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	976.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	15.0	62.0	60.9	62.1	63.6	65.3	66.4
Distance Attenuation	1,961.0	-42.3	-42.3	-42.3	-42.3	-42.3	-42.3
Shielding (Barrier Attenuation)	1,961.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		19.7	18.6	19.8	21.3	23.0	24.1
60 Minute Hourly Adjustment		**19.7**	**18.6**	**19.8**	**21.3**	**23.0**	**24.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R5**
Source: Trash Enclosure
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	1,635.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	1,635.0	feet	*Noise Source Height:*	4.0 feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	976.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	925.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	976.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	77.3	69.0	75.0	82.0	87.0	88.5
Distance Attenuation	1,635.0	-50.3	-50.3	-50.3	-50.3	-50.3	-50.3
Shielding (Barrier Attenuation)	1,635.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		27.0	18.7	24.7	31.7	36.7	38.2
20 Minute Hourly Adjustment		**22.2**	**13.9**	**19.9**	**26.9**	**31.9**	**33.4**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R5**
Source: Parking Lot
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	1,647.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	1,647.0	feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	976.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	925.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	976.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	60.1	56.7	60.7	63.7	67.1	79.5
Distance Attenuation	1,647.0	-50.4	-50.4	-50.4	-50.4	-50.4	-50.4
Shielding (Barrier Attenuation)	1,647.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		9.7	6.3	10.3	13.3	16.7	29.1
60 Minute Hourly Adjustment		**9.7**	**6.3**	**10.3**	**13.3**	**16.7**	**29.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R5**
Source: Gas Station Activity
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	2,096.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	2,096.0	feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	976.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	931.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	976.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	68.2	65.6	66.9	69.5	74.4	82.4
Distance Attenuation	2,096.0	-52.4	-52.4	-52.4	-52.4	-52.4	-52.4
Shielding (Barrier Attenuation)	2,096.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		15.8	13.2	14.5	17.1	22.0	30.0
60 Minute Hourly Adjustment		**15.8**	**13.2**	**14.5**	**17.1**	**22.0**	**30.0**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R5**
Source: Car Wash Tunnel
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	2,239.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	2,239.0	feet	*Noise Source Height:*	8.0 feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	976.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	931.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	976.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	10.0	88.3	81.6	92.0	92.6	93.3	93.8
Distance Attenuation	2,239.0	-47.0	-47.0	-47.0	-47.0	-47.0	-47.0
Shielding (Barrier Attenuation)	2,239.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		41.3	34.6	45.0	45.6	46.3	46.8
60 Minute Hourly Adjustment		**41.3**	**34.6**	**45.0**	**45.6**	**46.3**	**46.8**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R5**
Source: Car Wash Vacuum Activity
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	2,181.0 feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	2,181.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	0.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	976.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	931.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	976.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	74.6	74.2	75.4	77.2	78.0	78.8
Distance Attenuation	2,181.0	-52.8	-52.8	-52.8	-52.8	-52.8	-52.8
Shielding (Barrier Attenuation)	2,181.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		21.8	21.4	22.6	24.4	25.2	26.0
60 Minute Hourly Adjustment		**21.8**	**21.4**	**22.6**	**24.4**	**25.2**	**26.0**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/24/2019

Observer Location: **R5**
Source: Outdoor Playground
Condition: Operational

Project Name: Bedford Marketplace
Job Number: 12751
Analyst: B. Lawson

NOISE MODEL INPUTS

Noise Distance to Observer	1,561.0 feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	1,561.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	0.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	976.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	923.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	976.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	63.4	61.7	64.1	67.0	69.7	73.9
Distance Attenuation	1,561.0	-49.9	-49.9	-49.9	-49.9	-49.9	-49.9
Shielding (Barrier Attenuation)	1,561.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		13.5	11.8	14.2	17.1	19.8	24.0
60 Minute Hourly Adjustment		**13.5**	**11.8**	**14.2**	**17.1**	**19.8**	**24.0**

APPENDIX I:

Traffic Study

This Page Intentionally Left Blank

Bedford Marketplace

TRAFFIC STUDY

CITY OF CORONA

PREPARED FOR:

Mr. Glen Powles
Guardian Capital
5780 Fleet Street, Suite 225
Carlsbad, CA 92008

PREPARED BY:

Marlie Whiteman, P.E.
mwhiteman@urbanxroads.com
(949) 336-5991

John Kain, AICP
jkain@urbanxroads.com
(949) 336-5990

Janette Cachola
jcachola@urbanxroads.com
(949) 336-5989

JANUARY 10, 2020 (REVISED)
OCTOBER 15, 2019

TABLE OF CONTENTS

TABLE OF CONTENTS I
APPENDICES III
LIST OF EXHIBITS IV
LIST OF TABLES .....
LIST OF ABBREVIATED TERMS I
1.0 INTRODUCTION AND KEY FINDINGS 1
1.1 Project Overview 1
1.2 Analysis Scenarios 6
1.3 Study Area Circulation Conditions 7
1.4 Recommended Improvements 8
1.5 Site Access 10
1.6 Vehicle Miles Traveled 11
2.0 AREA CONDITIONS 13
2.1 Existing Circulation Network 13
2.2 City of Corona General Plan Circulation Element 13
2.3 Existing (2017 and 2018) Traffic Counts 13
2.4 Existing (2017 and 2018) Conditions Intersection Operations Analysis 21
2.5 Existing (2017 and 2018) Conditions Traffic Signal Warrants Analysis 21
3.0 PROJECTED FUTURE TRAFFIC 25
3.1 Project Traffic 25
3.2 Total Future Traffic 27
3.3 Site Access Improvements 35
3.4 Internal Circulation 41
4.0 METHODOLOGIES 43
4.1 Level of Service 43
4.2 Intersection Capacity Analysis 43
4.3 Queuing Analysis 45
4.4 Traffic Signal Warrant Analysis Methodology 46
4.5 LOS Criteria 47
5.0 INTERIM YEAR (2021) TRAFFIC ANALYSIS 49
5.1 Roadway Improvements 49
5.2 Interim Year (2021) Traffic Volume Forecasts 49
5.3 Intersection Operations Analysis and Recommended Improvements 49
5.4 Queuing Analysis 54
5.5 Traffic Signal Warrant Analysis 56
6.0 HORIZON YEAR 2035 TRAFFIC ANALYSIS 57
6.1 Horizon Year 2035 Traffic Volume Forecasts 57
6.2 Intersection Operations Analysis and Recommended Improvements 57
6.3 Queuing Analysis 60
6.4 Traffic Signal Warrant Analysis 63
7.0 VEHICLE MILES TRAVELED (VMT) 63
7.1 Corona VMT Analysis Guidelines 63

7.2 Project Design Features 63
7.3 Project Employment and VMT Estimates 64
8.0 FINDINGS AND CONCLUSIONS 67
8.1 Project Fair Share Calculations..... 68

APPENDICES

APPENDIX 1.1: I-15 / CAJALCO INTERCHANGE AREA IMPROVEMENT PLANS
APPENDIX 2.1: TRAFFIC COUNT DATA SHEETS
APPENDIX 2.2: EXISTING (2017 AND 2018) INTERSECTION OPERATIONS ANALYSIS WORKSHEETS
APPENDIX 2.3: EXISTING (2017 AND 2018) TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS
APPENDIX 5.1: INTERIM YEAR (2021) WITHOUT PROJECT INTERSECTION OPERATIONS ANALYSIS WORKSHEETS
APPENDIX 5.2: INTERIM YEAR (2021) WITH PROJECT INTERSECTION OPERATIONS ANALYSIS WORKSHEETS AND QUEUEING ANALYSIS WORKSHEETS
APPENDIX 5.3: INTERIM YEAR (2021) CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS
APPENDIX 6.1: HORIZON YEAR 2035 WITHOUT PROJECT INTERSECTION OPERATIONS ANALYSIS WORKSHEETS
APPENDIX 6.2: HORIZON YEAR 2035 WITH PROJECT INTERSECTION OPERATIONS ANALYSIS WORKSHEETS AND QUEUEING ANALYSIS WORKSHEETS
APPENDIX 6.3: HORIZON YEAR 2035 CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS
APPENDIX 7.1: PROJECT EMPLOYMENT ESTIMATES

LIST OF EXHIBITS

EXHIBIT 1-1: TRAFFIC STUDY AREA 2
EXHIBIT 1-2: PRELIMINARY SITE PLAN 3
EXHIBIT 1-3: PROJECT ONLY VOLUME NET INCREASES IN COMPARISON TO 80 TSF COMMERCIAL AM PEAK HOUR PROJECT VOLUMES (PROPOSED EXPANSION VS APPROVED) 4
EXHIBIT 1-4: PROJECT ONLY VOLUME NET INCREASES IN COMPARISON TO 80 TSF COMMERCIAL PM PEAK HOUR PROJECT VOLUMES (PROPOSED EXPANSION VS APPROVED) 5
EXHIBIT 2-1: EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS 14
EXHIBIT 2-2: CITY OF CORONA GENERAL PLAN CIRCULATION ELEMENT 15
EXHIBIT 2-3: CITY OF CORONA GENERAL PLAN ROADWAY CROSS-SECTIONS 16
EXHIBIT 2-4: EXISTING (2017 AND 2018) AM PEAK HOUR INTERSECTION VOLUMES 19
EXHIBIT 2-5: EXISTING (2017 AND 2018) PM PEAK HOUR INTERSECTION VOLUMES 20
EXHIBIT 2-6: EXISTING (2017 AND 2018) AVERAGE DAILY TRAFFIC (ADT) 22
EXHIBIT 3-1: BEDFORD MARKETPLACE PROJECT (EXTERNAL) TRIP DISTRIBUTION PATTERN 28
EXHIBIT 3-2: PROJECT ONLY NET INCREASE AM PEAK HOUR INTERSECTION VOLUMES 29
EXHIBIT 3-3: PROJECT ONLY NET INCREASE PM PEAK HOUR INTERSECTION VOLUMES 30
EXHIBIT 3-4: INTERIM YEAR (2021) WITHOUT PROJECT AM PEAK HOUR INTERSECTION VOLUMES 31
EXHIBIT 3-5: INTERIM YEAR (2021) WITHOUT PROJECT PM PEAK HOUR INTERSECTION VOLUMES 32
EXHIBIT 3-6: INTERIM YEAR (2021) WITH PROJECT AM PEAK HOUR INTERSECTION VOLUMES 33
EXHIBIT 3-7: INTERIM YEAR (2021) WITH PROJECT PM PEAK HOUR INTERSECTION VOLUMES 34
EXHIBIT 3-8: HORIZON YEAR 2035 WITHOUT PROJECT AM PEAK HOUR INTERSECTION VOLUMES 36
EXHIBIT 3-9: HORIZON YEAR 2035 WITHOUT PROJECT PM PEAK HOUR INTERSECTION VOLUMES 37
EXHIBIT 3-10: HORIZON YEAR 2035 WITH PROJECT AM PEAK HOUR INTERSECTION VOLUMES 38
EXHIBIT 3-11: HORIZON YEAR 2035 WITH PROJECT PM PEAK HOUR INTERSECTION VOLUMES 39
EXHIBIT 3-12: ACCESS IMPROVEMENTS 40
EXHIBIT 8-1: INTERSECTION LANE GEOMETRY AND TRAFFIC CONTROL, BY SCENARIO 70
EXHIBIT 8-2: BEDFORD CANYON ROAD MEDIAN DESIGN WITH PROJECT LEFT TURN POCKETS 73

LIST OF TABLES

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS 6
TABLE 2-1: INTERSECTION OPERATIONS ANALYSIS SUMMARY FOR EXISTING (2017 AND 2018) CONDITIONS 23
TABLE 3-1: PROJECT TRIP GENERATION SUMMARY 26
TABLE 4-1: SIGNALIZED INTERSECTION LOS THRESHOLDS 44
TABLE 4-2: UNSIGNALIZED INTERSECTION DESCRIPTION OF LOS 45
TABLE 4-3: TRAFFIC SIGNAL WARRANT ANALYSIS LOCATIONS 46
TABLE 5-1: INTERSECTION OPERATIONS ANALYSIS SUMMARY FOR INTERIM YEAR (2021) CONDITIONS 50
TABLE 5-2: INTERIM YEAR (2021) WITH PROJECT CONDITIONS LANE STORAGE LENGTHS 57
TABLE 6-1: INTERSECTION OPERATIONS ANALYSIS SUMMARY FOR HORIZON YEAR 2035 CONDITIONS 58
TABLE 6-2: HORIZON YEAR 2035 WITH PROJECT CONDITIONS LANE STORAGE LENGTHS 62
TABLE 8-1: 2035 WITH PROJECT FAIR SHARE PERCENTAGES FOR VARIOUS SCENARIOS 69

LIST OF ABBREVIATED TERMS

ADT	Average Daily Traffic
Caltrans	California Department of Transportation
FHWA	Federal Highway Administration
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
MUTCD	Manual on Uniform Traffic Control Devices
PHF	Peak Hour Factor
Project	Bedford Marketplace
RivTAM	Riverside County Transportation Analysis Model
RTA	Riverside Transit Authority
SCAG	Southern California Association of Governments
SP	Service Population
TIA	Traffic Impact Analysis
TSF	Thousand Square Feet
v/c	Volume-to-Capacity Ratio
vphg	Vehicle Per Hour of Green
VMT	Vehicle Miles Traveled
VPH	Vehicle Per Hour
WRCOG	Western Riverside Council of Governments

1.0 INTRODUCTION AND KEY FINDINGS

The purpose of this traffic study report is to evaluate the proposed Bedford Marketplace development ("Project"), an expansion of the previously approved commercial development area included within the Arantine Hills Specific Plan. The 80,000 square feet (sf) of commercial retail use included in the Arantine Hills Specific Plan was evaluated in 2015 and 2018 traffic studies prepared for amendments to the Arantine Hills Specific Plan. The proposed Project being studied in this TIA is the expansion of Bedford Marketplace from 80,000 sf to 135,000 sf of retail uses and a 135-room hotel. The incremental expansion of Bedford Marketplace constitutes the "Project" analyzed in this study. Reference to "Bedford Marketplace" includes the total development of the center, equal to the combination of the proposed Project and the previously approved 80,000 sf in the Arantine Hills Specific Plan.

Study objectives include (1) evaluation of interim year 2021 without and with Project conditions; (2) evaluation of horizon year 2035 without and with Project conditions; (3) determination of on-site and off-site improvements needed to achieve City of Corona level of service (LOS) requirements, and (4) estimation of the Project vehicle miles traveled (VMT). The City is in the process of updating its General Plan and adopting an updated Citywide traffic model. This TIA analyzes the incremental change in traffic impacts of the Project in the same manner as previously analyzed in the 2015 and 2018 studies.

The Project is located south of Eagle Glen Parkway – Cajalco Road and west of the I-15 Freeway in the City of Corona as shown on Exhibit 1-1.

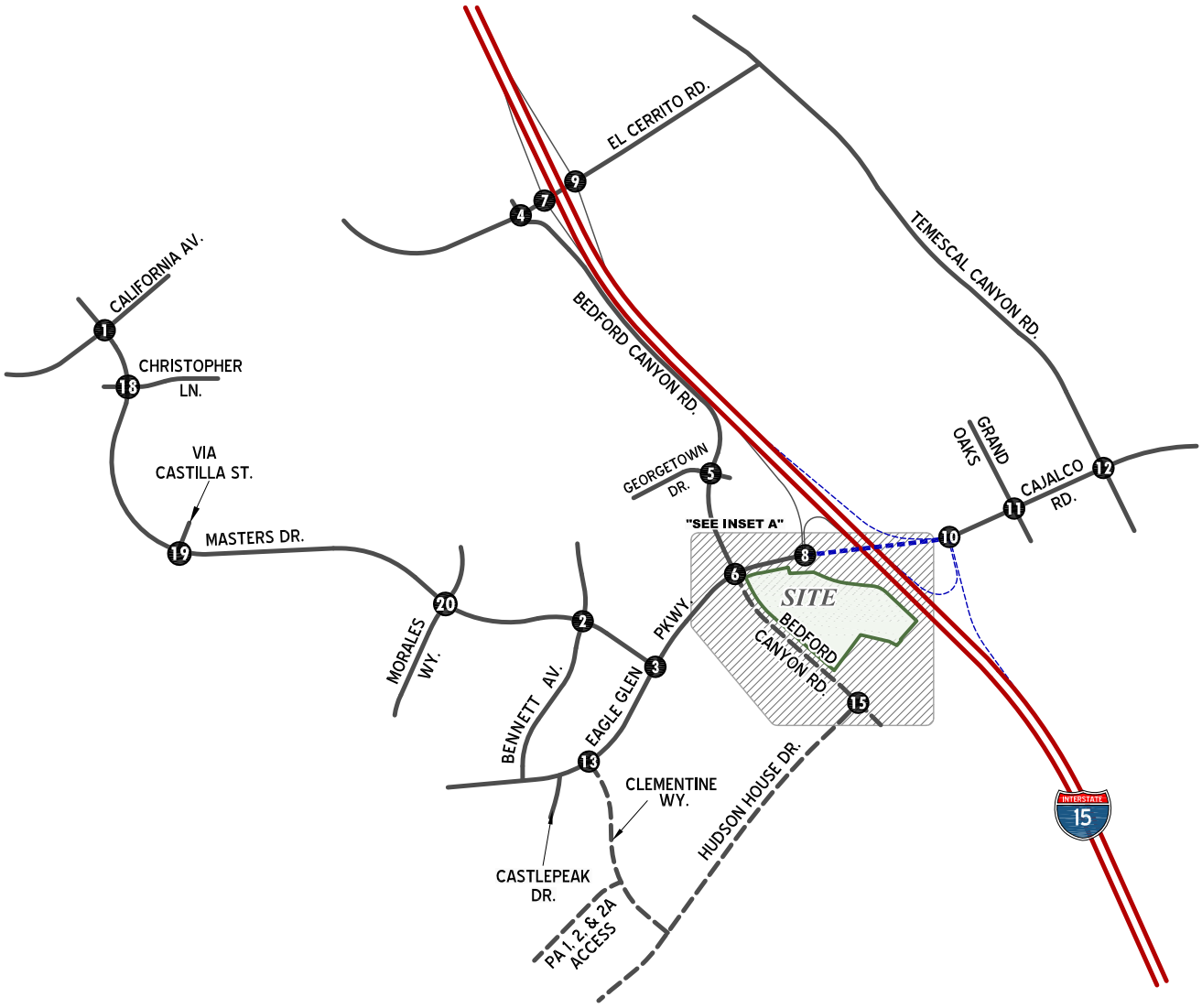
1.1 PROJECT OVERVIEW

The Project land use plan (shown on Exhibit 1-2) expands the approved commercial site and is proposed to consist of the following uses:

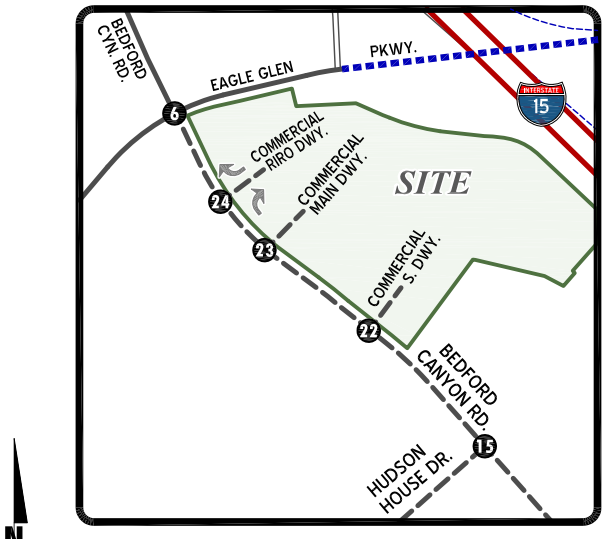
- Hotel - 135 rooms
- Health/fitness club - 38,000 sf
- Day Care Center - 9,990 sf
- Retail Shopping Center – 51,000 sf
- Bank – 6,562 sf
- Restaurant – 21,230 sf
- Gas Station – 18 vehicle fueling positions (vfp's)
- Automated Car Wash – 3,600 sf

Access to the Project site will be provided via Bedford Canyon Road. The Project will provide two full access driveways and one right-in/right-out driveway, consistent with the amended Arantine Hills Specific Plan.

EXHIBIT 1-1: TRAFFIC STUDY AREA



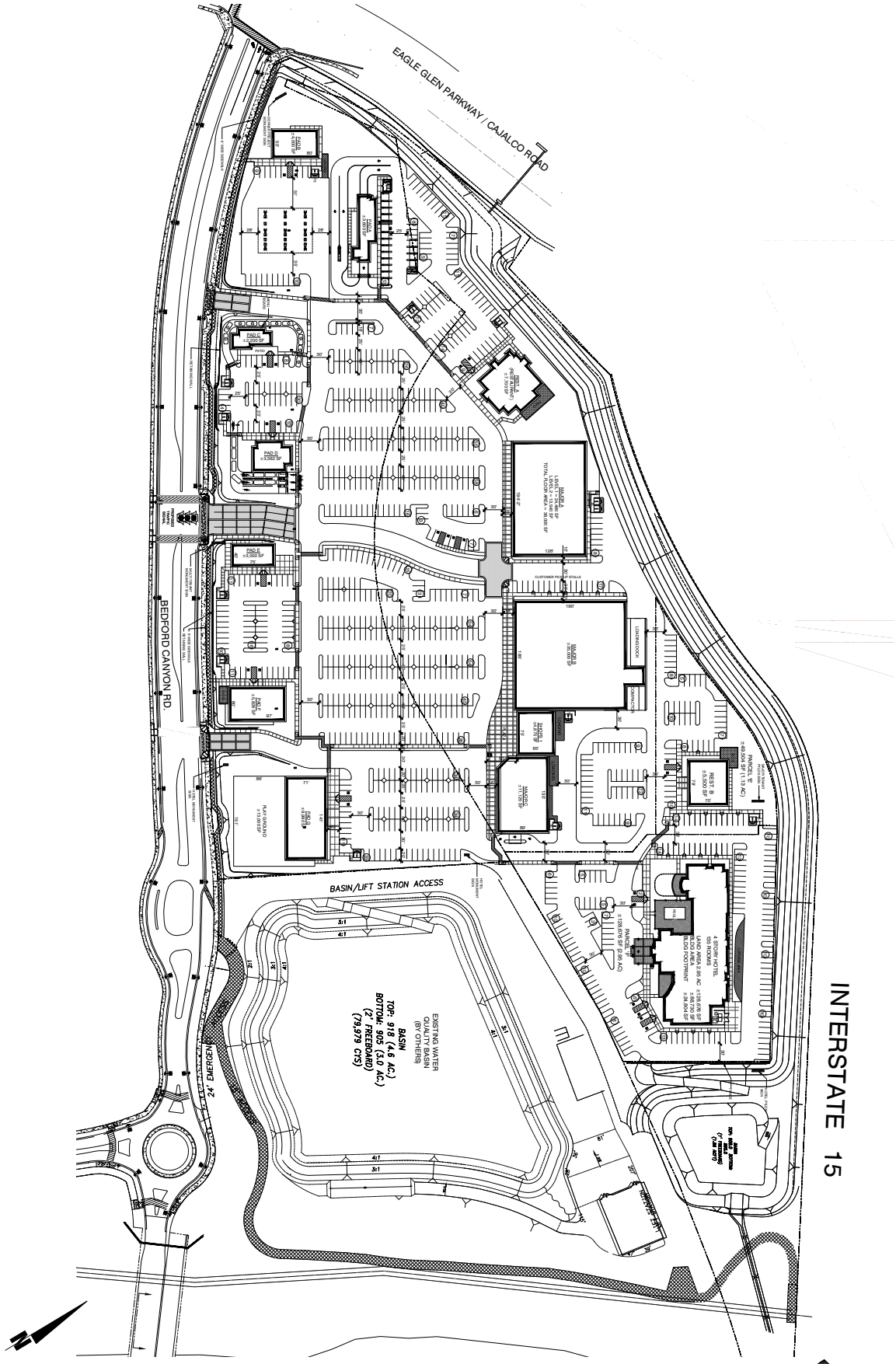
PROJECT SITE AREA



LEGEND:

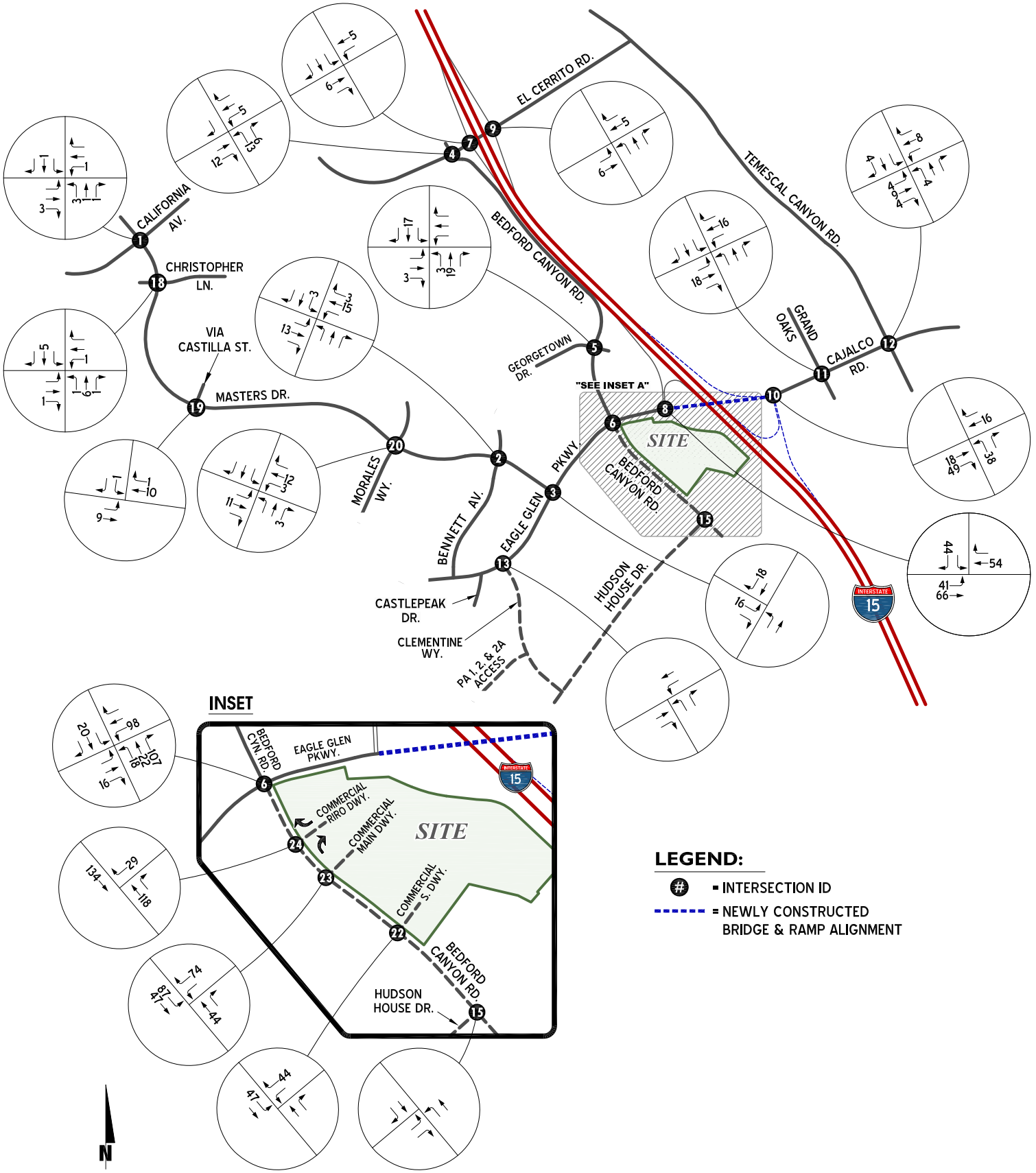
- (#) = INTERSECTION ID
- = NEWLY CONSTRUCTED BRIDGE & RAMP ALIGNMENT
- RIRO = RIGHT-IN/RIGHT-OUT ONLY ACCESS

EXHIBIT 1-2: PRELIMINARY SITE LAN



12554 - 001_study area.dwg

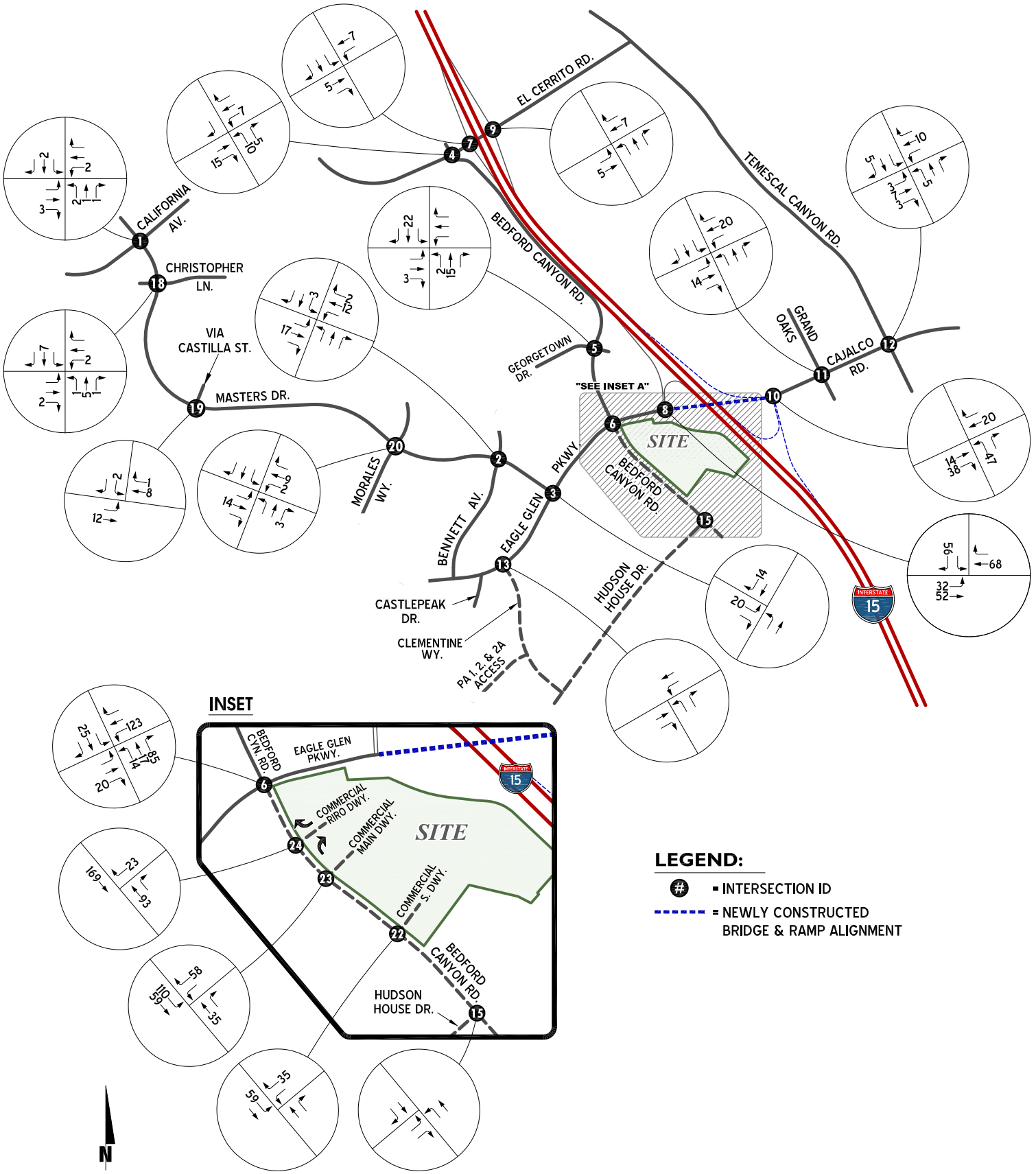
EXHIBIT 1-3: PROJECT ONLY VOLUME (EXTERNAL TRIPS) NET INCREASES IN COMPARISON TO 80 TSF RETAIL AM PEAK HOUR



12554 - 002_volumes.dwg

URBAN CROSSROADS

EXHIBIT 1-4: PROJECT ONLY VOLUME (EXTERNAL TRIPS) NET INCREASES IN COMPARISON TO 80 TSF RETAIL PM PEAK HOUR



Trips generated by the proposed Project's land plan have been estimated based on trip generation rates collected by the Institute of Transportation Engineers (ITE) as presented in ITE's most current edition of Trip Generation (10th Edition, 2017). Bedford Marketplace is estimated to generate a total of approximately 7,014 external trips per day with 394 AM peak hour external trips and 686 PM peak hour external trips. Of the total number of vehicle trips, the proposed Project generates 2,061 external trips per day with 281 AM peak hour external trips and 285 PM peak hour external trips.

The net increase to the AM peak hour and PM peak hour project volumes related to the Project, as compared to the previously approved project, are presented in Exhibit 1-3 (morning peak hour) and Exhibit 1-4 (evening peak hour) for the study area intersections.

1.2 ANALYSIS SCENARIOS

This traffic study includes the following conditions:

- Existing (2017 and 2018) Conditions
- Interim Year (2021) Without and With Project Conditions
- Horizon Year 2035 Without and With Project Conditions

1.2.1 STUDY AREA INTERSECTIONS

The intersection analysis locations for this traffic study are listed in Table 1-1 and previously shown on Exhibit 1-1.

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction
1	Masters Drive / California Avenue	Corona
2	Masters Drive / Bennett Avenue	Corona
3	Masters Drive / Eagle Glen Parkway	Corona
4	Bedford Canyon Road / El Cerrito Road	Corona
5	Bedford Canyon Road / Georgetown Drive	Corona
6	Bedford Canyon Road / Eagle Glen Parkway	Corona
7	I-15 SB Ramps / El Cerrito Road	Caltrans
8	I-15 SB Ramps / Cajalco Road	Caltrans
9	I-15 NB Ramps / El Cerrito Road	Caltrans
10	I-15 NB Ramps / Cajalco Road	Caltrans
11	Grand Oaks / Cajalco Road	Corona
12	Temescal Canyon Road / Cajalco Road	Corona
13	Clementine Way / Eagle Glen Parkway	Corona
15	Bedford Canyon Road / Hudson House Drive	Corona
18	Masters Drive / Christopher Lane	Corona
19	Via Castilla Street / Masters Drive	Corona
20	Morales Way / Masters Drive	Corona

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS (CONTINUED)

ID	Intersection Location	Jurisdiction
22	Bedford Canyon Road / Commercial South Driveway	Corona
23	Bedford Canyon Road / Commercial Main Driveway	Corona
24	Bedford Canyon Road / Commercial Right-In/Right-Out (RIRO) Driveway	Corona

1.3 STUDY AREA CIRCULATION CONDITIONS

Construction activity is still underway in the Cajalco Road / I-15 interchange area. A new 6-lane bridge has been built over the I-15 mainline, replacing the previous 2-lane divided roadway, between the I-15 SB and I-15 NB ramps. Extensive improvements are also being made to the I-15 on and off ramps.

Cajalco Road / I-15 interchange area improvement plans are illustrated in Appendix 1.1. Consistent with the previously approved Arantine Hills Traffic Impact Analysis (2015), LOS "E" is anticipated to be considered acceptable level of service for the I-15 / Cajalco Road interchange.

1.3.1 INTERSECTION OPERATIONS ANALYSIS

For Existing (2017 and 2018) Conditions, the following study area intersections are currently operating at deficient level of service during the morning peak hours:

ID	Intersection Location	Jurisdiction
1	Masters Drive / California Avenue	Corona
18	Masters Drive / Christopher Lane	Corona
19	Via Castilla Street / Masters Drive	Corona
20	Morales Way / Masters Drive	Corona

Improvements have previously been identified to address these existing deficiencies in 2015 and 2018 traffic studies prepared for amendments to the Arantine Hills Specific Plan.

For Interim Year (2021) conditions, the improvements under construction at or near the Cajalco Road / I-15 Interchange area are assumed to be completed. No additional off-site intersections are anticipated to operate at unacceptable level of service, beyond those intersections previously identified under existing conditions.

For Horizon Year 2035 Without Project Conditions, the following four additional intersections are anticipated to operate at deficient levels of service (without currently planned improvements), beyond those intersections previously identified under existing conditions:

ID	Intersection Location	Jurisdiction
2	Masters Drive / Bennett Avenue	Corona
5	Bedford Canyon Road / Georgetown Drive	Corona
7	I-15 SB Ramps / El Cerrito Road	Caltrans
12	Temescal Canyon Road / Cajalco Road	Corona

Improvements have also previously been identified to address these 2035 deficiencies in 2015 and 2018 traffic studies prepared for amendments to the Arantine Hills Specific Plan.

For Horizon Year 2035 With Project Conditions, there are no new intersections anticipated to operate at deficient level of service, beyond the intersections identified under 2035 Without Project Conditions.

1.3.2 TRAFFIC SIGNAL WARRANT ANALYSIS

For Existing (2017 and 2018) Conditions, the following unsignalized intersections warrant a traffic signal:

ID	Intersection Location	Jurisdiction
1	Masters Drive / California Avenue	Corona
18	Masters Drive / Christopher Lane	Corona
20	Morales Way / Masters Drive	Corona

For Interim Year (2021) Without Project Conditions, the intersection of Bedford Canyon Road / Commercial Main Driveway (#23) is anticipated to meet traffic signal warrants (in addition to the intersection previously identified under Existing conditions).

It should be noted that new traffic signals were recently installed at the intersections of Masters Drive / Eagle Glen Parkway (#3) and Clementine Way / Eagle Glen Parkway (#13).

For Horizon Year 2035 Without Project Conditions, the following intersections are anticipated to meet traffic signal warrants, in addition to the intersections identified previously under Interim Year (2021) conditions:

ID	Intersection Location	Jurisdiction
2	Masters Drive / Bennett Avenue	Corona
5	Bedford Canyon Road / Georgetown Drive	Corona

For Horizon Year 2035 With Project Conditions, there are no additional intersections anticipated to meet traffic signal warrants (beyond the intersections identified previously under 2035 Without Project conditions).

1.4 RECOMMENDED IMPROVEMENTS

For Interim Year (2021) Without and With Project Conditions, the following off-site improvements have previously been recommended in the study area in 2015 and 2018 traffic studies prepared for amendments to the Arantine Hills Specific Plan:

Masters Drive / California Drive (#1)

- Participate in the installation of a traffic signal.

Bedford Canyon Road / Eagle Glen Parkway - Cajalco Road (#6) *– Under Construction*

- Traffic Signal Modification.
- Adjust the east leg striping to provide a 2nd receiving lane.
- NB Approach: Participate in the construction of one left turn lane, one through lane and one right turn lane with overlap phasing.
- SB Approach: Modify striping to provide a new shared left-through lane.
- EB Approach: Modify striping to provide a new shared through/right turn lane.
- WB Approach: Construct 2 left turn lanes.

I-15 SB Ramps / Cajalco Road (#8) *– Under Construction*

- SB Approach: Participate in the construction of 2nd left turn lane and 2nd right turn lane.
- EB Approach: Participate in the construction of 2nd left turn lane, 2nd through lane, and 3rd through lane.
- WB Approach: Participate in the construction of 2nd through lane
- It should be noted that the planned I-15/Cajalco Road interchange improvements accommodate triple southbound left turns. However, based on the intersection operations results, providing a minimum of two southbound left turns would result to an acceptable level of service.

I-15 NB Ramps / Cajalco Road (#10)

- NB Approach: Participate in the construction of 2nd left turn lane and 2nd right turn lane.
- EB Approach: Participate in the construction of 2nd and 3rd through lanes and one right turn lane with overlap phasing.
- WB Approach: Participate in the construction of 3rd and 4th through lanes.

Grand Oaks / Cajalco Road (#11)

- EB Approach: Participate in the construction of 3rd through lane.

Masters Drive / Christopher Lane (#18)

- Participate in the installation of a traffic signal, or roundabout.

Via Castilla Street / Masters Drive (#19)

- Participate in the conversion to cross-street stop control on Via Castilla Street (in conjunction with Masters Drive / Christopher Lane and Morales Way / Masters Drive traffic signals), or roundabout.

Morales Way / Masters Drive (#20)

- Participate in the installation of a traffic signal, or roundabout.

For Horizon Year 2035 Without and With Project Conditions, the following off-site improvements have previously been recommended in the study area in 2015 and 2018 traffic studies prepared for amendments to the Arantine Hills Specific Plan:

Masters Drive / Bennett Avenue (#2)

- Participate in the installation of a traffic signal.

Bedford Canyon Road / Georgetown Drive (#5)

- Participate in the installation of a traffic signal.

I-15 SB Ramps / El Cerrito Road (#7)

- EB Approach: Participate in the construction of a separate right turn lane.

Temescal Canyon Road / Cajalco Road (#12)

- Participate in the widening of Cajalco Road east of Temescal Canyon Road to provide 2nd and 3rd eastbound lane within 600 feet of Temescal Canyon Road.
- SB Approach: Modify striping to provide a 2nd left turn lane, in addition to the existing two through lanes.
- EB Approach: Modify striping to provide a 2nd through lane, in addition to the existing left turn lane and right turn lane.
- WB Approach: Construct one right turn lane.

Improvements recommended in this study with the proposed Project are consistent to the previously approved Arantine Hills TIA (2015) under 2035 conditions; the Project does not trigger the need for additional improvements beyond those identified in the 2015 study for 2035 conditions.

1.5 SITE ACCESS

Access in and out of the Project occurs at three existing driveways along Bedford Canyon Road south of Eagle Glen Parkway/Cajalco Road. The northerly driveway is limited to right-in right-out (RIRO) conditions, without an opening of the median on Bedford Canyon Road. It serves as a convenient exit for vehicles leaving the Gas Station and Automated Car Wash, bound for Eagle Glen Parkway/Cajalco Road. The RIRO driveway also accommodates entering vehicles from northbound on Bedford Canyon Road.

The main Project driveway is located at a mid-point along the site frontage to Bedford Canyon Road. It is a full access location, serving left and right turns to and from Bedford Canyon Road with traffic signal control. With expansion of commercial uses at the Project site, the existing

southbound left turn lane (approximately 50 feet turn pocket) serving the main Project driveway is recommended to be extended to provide 200 feet of vehicle queuing.

The southerly Project driveway is also a full access location, serving left and right turns to and from Bedford Canyon Road with cross-street stop sign control of the exiting vehicles. At this location, the existing southbound left turn lane is recommended to be extended to provide 150 feet of vehicle queuing with the expansion of commercial uses at the Project site.

An efficient network of on-site driveways provides connectivity to all access points and facilitates the internal flow of activity between the variety of Project land uses.

1.6 VEHICLE MILES TRAVELED

The California Environmental Quality Act (CEQA) procedures for determination of transportation impacts have recently changed to an evaluation of Vehicle Miles Traveled (VMT) rather than vehicle delay or level of service, due to Senate Bill 743 (SB 743). The City of Corona VMT Analysis Guidelines provide a structure for evaluating VMT on a project level basis. Vehicle delay and level of service are still used in Corona traffic studies, as presented in sections 2 through 7 of this traffic study.

Approximately 582 employees (including 240 temporary and 342 permanent positions) are anticipated for Bedford Marketplace. The previous approval of commercial use for the site accounts for approximately 320 employees (based upon an average of 4 employees per tsf of gross floor area). An increase of approximately 262 jobs will occur with the Project.

The mix of land uses (including hotel, retail, and service-oriented uses for Bedford Marketplace) is anticipated to encourage trip capture on-site, resulting in a lower than usual VMT per service population (SP). The combination of banking, restaurant, gas, health club, retail, and a day care center in close proximity to residential and hotel uses is expected to encourage internal interaction.

Pathways and bike routes associated with the site provide an integrated sidewalk and trails system that conveniently links the Bedford Marketplace site to community facilities, residential neighborhoods, and parks. The Project is also located within a Low VMT generating traffic analysis zone (TAZ), with a VMT / service population between 26.6 and 27.8 VMT/SP, which is less than the City of Corona average of approximately 30 VMT/SP.

The VMT / SP associated with the Project could potentially fall within the range of approximately 26.6 to 31.5, but the Project location, mix of uses, and effectiveness of the design features support a conservative estimate of 29 VMT / SP, which has been developed utilizing the procedures documented in Section 7. The resulting total Project VMT is approximately 7,598 for the 262 employees added by the project, which is less than the City average per SP and considered a less than significant impact based upon City criteria.

This page intentionally left blank.

2.0 AREA CONDITIONS

This section provides a summary of the existing circulation network, the City of Corona General Plan Circulation Network, and a review of existing peak hour intersection operations, roadway analyses and traffic signal warrants.

2.1 EXISTING CIRCULATION NETWORK

Per discussion with City of Corona staff, the study area includes a total of twenty (20) existing and future intersections as shown previously on Exhibit 1-1. Of these twenty (20) intersections, the existing study area circulation network includes fifteen (15) intersections. The other five (5) intersections in the study area are future planned intersections that are currently under construction (Arantine Hills roadways and key project driveways).

Exhibit 2-1 illustrates the study area intersections located near the proposed Project and identifies the number of through traffic lanes for existing roadways and intersection traffic controls (during interchange construction in 2018).

2.2 CITY OF CORONA GENERAL PLAN CIRCULATION ELEMENT

As previously noted, the Project site is located within the City of Corona. Exhibit 2-2 shows the City of Corona General Plan Circulation Element, and Exhibit 2-3 illustrates the City of Corona General Plan Roadway Cross-Sections.

2.3 EXISTING (2017 AND 2018) TRAFFIC COUNTS

The AM peak hour traffic volumes were determined by counting traffic volumes in the three hour period between 6:00 and 9:00 AM. The PM peak hour traffic volumes were identified by counting traffic volumes in the two hour period from 4:00 to 6:00 PM. For the purpose of this analysis, the counts provided in the November 2018 traffic assessment for the Arantine Hills Specific Plan Amendment No. 2 are presented in this report due to ongoing construction activity in the Cajalco interchange area.

The manual AM and PM peak hour turning movement counts were conducted in October 2017 and March 2018. The raw manual peak hour turning movement traffic count data sheets are included in Appendix "2.1". Flow conservation checks have been performed to the existing peak hour counts in an effort to ensure the flow of traffic volumes between closely spaced intersections is maintained.

Existing (2017 and 2018) AM and PM peak hour intersection volumes are shown on Exhibit 2-4 and Exhibit 2-5, respectively.

EXHIBIT 2-1: EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS

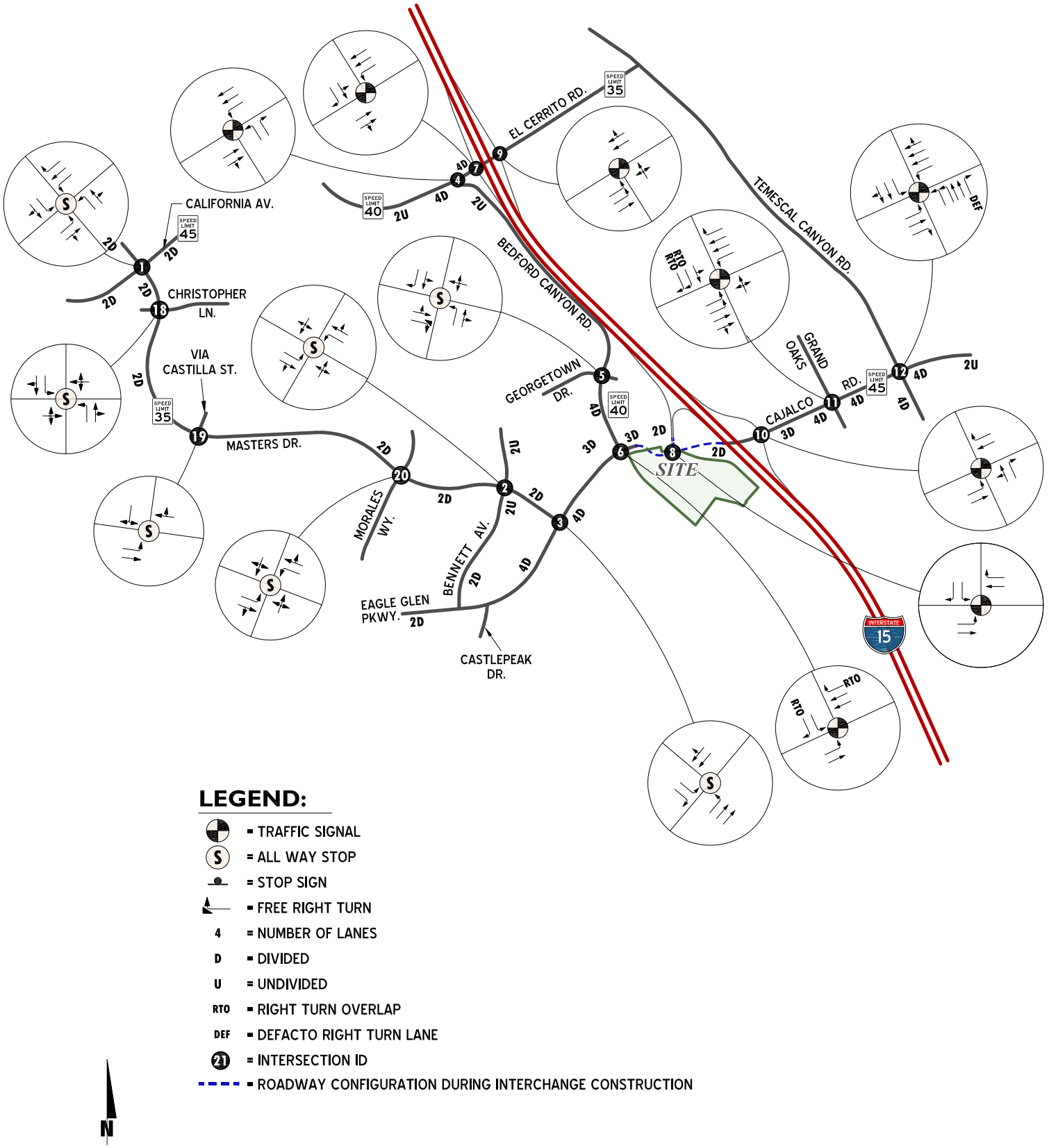
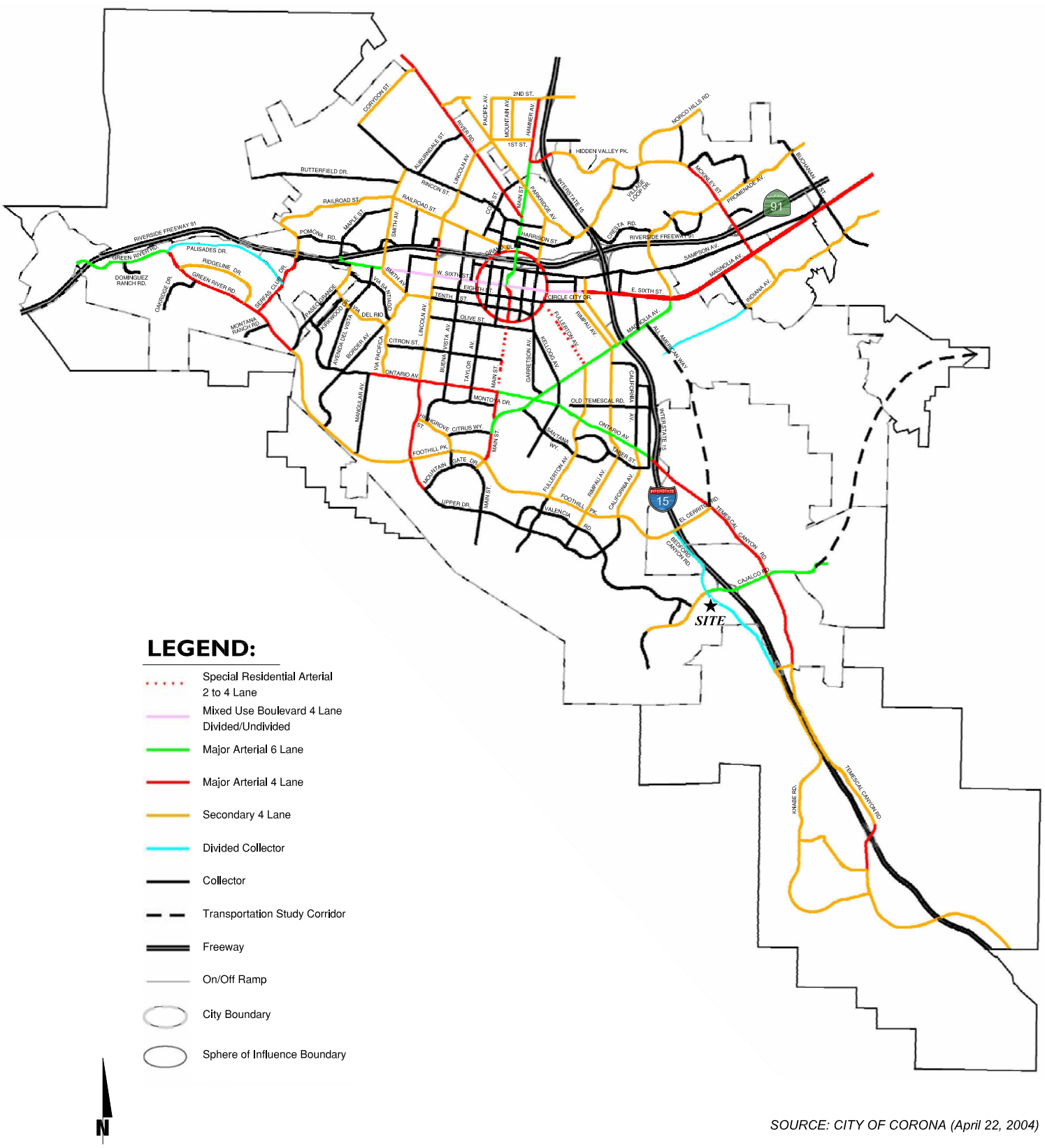


EXHIBIT 2-2: CITY OF CORONA GENERAL PLAN CIRCULATION ELEMENT

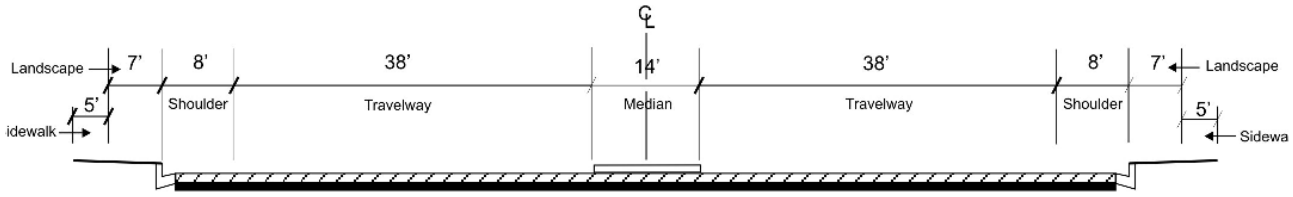


SOURCE: CITY OF CORONA (April 22, 2004)

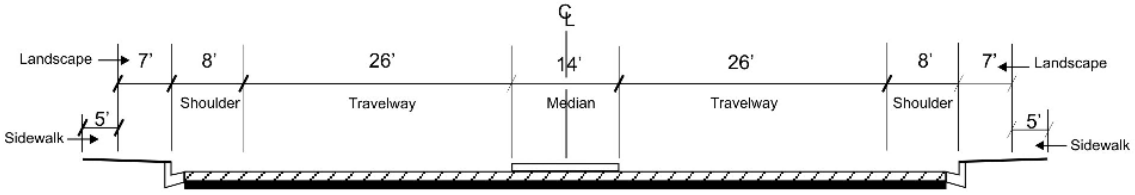
12254 - gpce.dwg

URBAN CROSSROADS

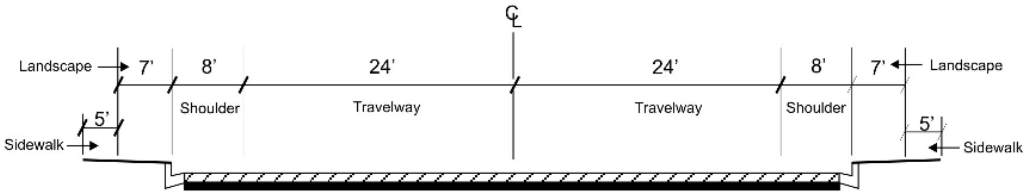
EXHIBIT 2-3 (1 OF 3): CITY OF CORONA GENERAL PLAN CROSS-SECTIONS



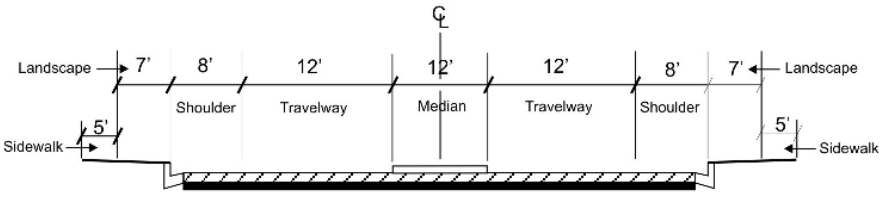
Major Arterial (6 lanes)
R.W. 130
Roadway 106



Major Arterial (4 lanes)
R.W. 106
Roadway 82



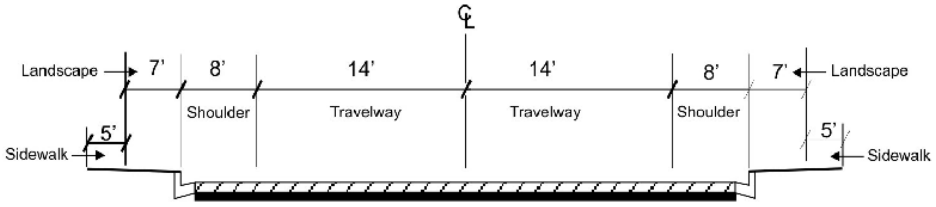
Secondary (4 lanes)
R.W. 88
Roadway 64



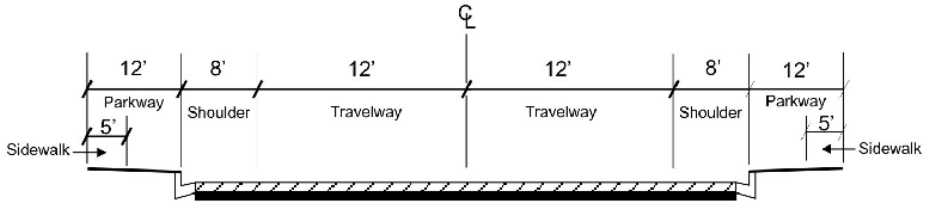
Divided Collector (2 lanes)
R.W. 76
Roadway 52

SOURCE: CITY OF CORONA

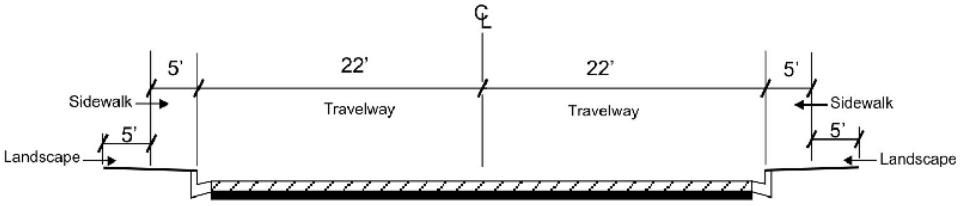
EXHIBIT 2-3 (2 OF 3): CITY OF CORONA GENERAL PLAN CROSS-SECTIONS



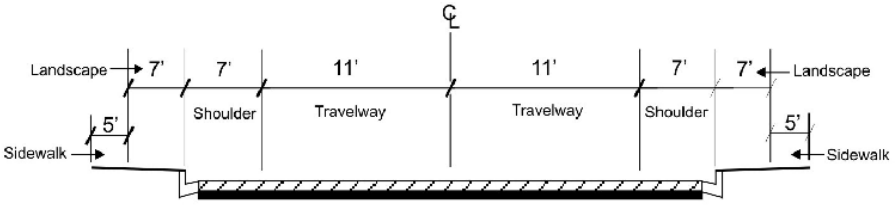
Collector (2 lanes)
R.W. 68
Roadway 44



Local Street
R.W. 64
Roadway 40
Note: See local residential street Planning Policy 6.1.10



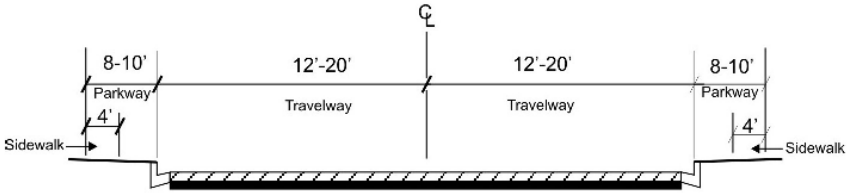
Local Industrial
R.W. 64
Roadway 44



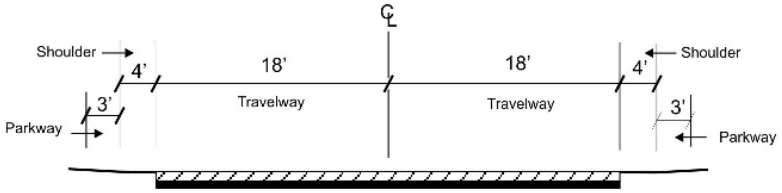
Cul-De-Sac
R.W. 60
Roadway 36

SOURCE: CITY OF CORONA

EXHIBIT 2-3 (3 OF 3): CITY OF CORONA GENERAL PLAN CROSS-SECTIONS



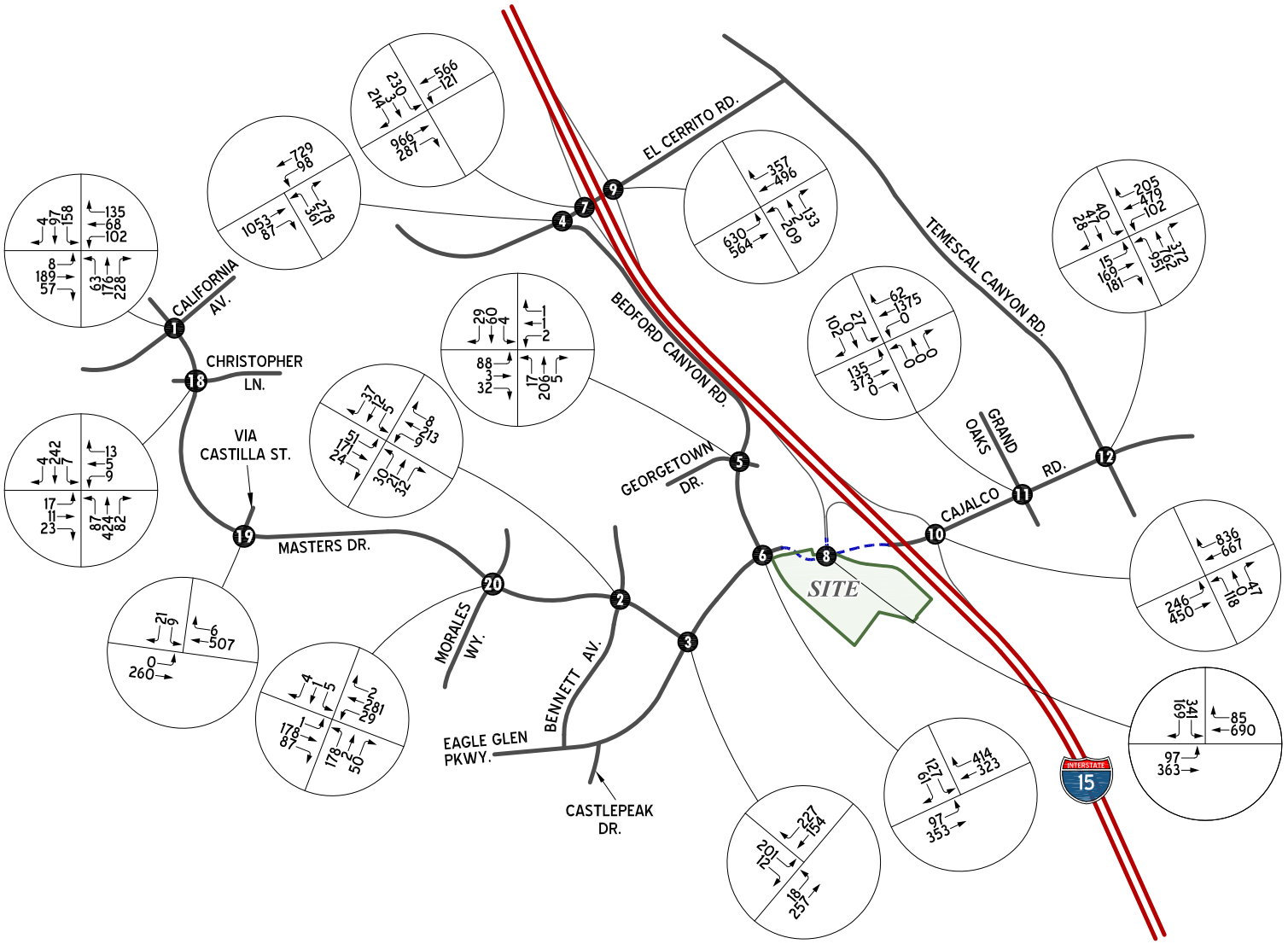
Private Residential Street
R.W. 40-60
Roadway 24-40
Note: See local residential street Planning Policy 6.1.10



Rural Road (Traffic Volume)
R.W. 50
Roadway 36
Note: See local residential street Planning Policy 6.1.10

SOURCE: CITY OF CORONA

EXHIBIT 2-4: EXISTING (2017/2018) AM PEAK HOUR INTERSECTION VOLUMES



LEGEND:

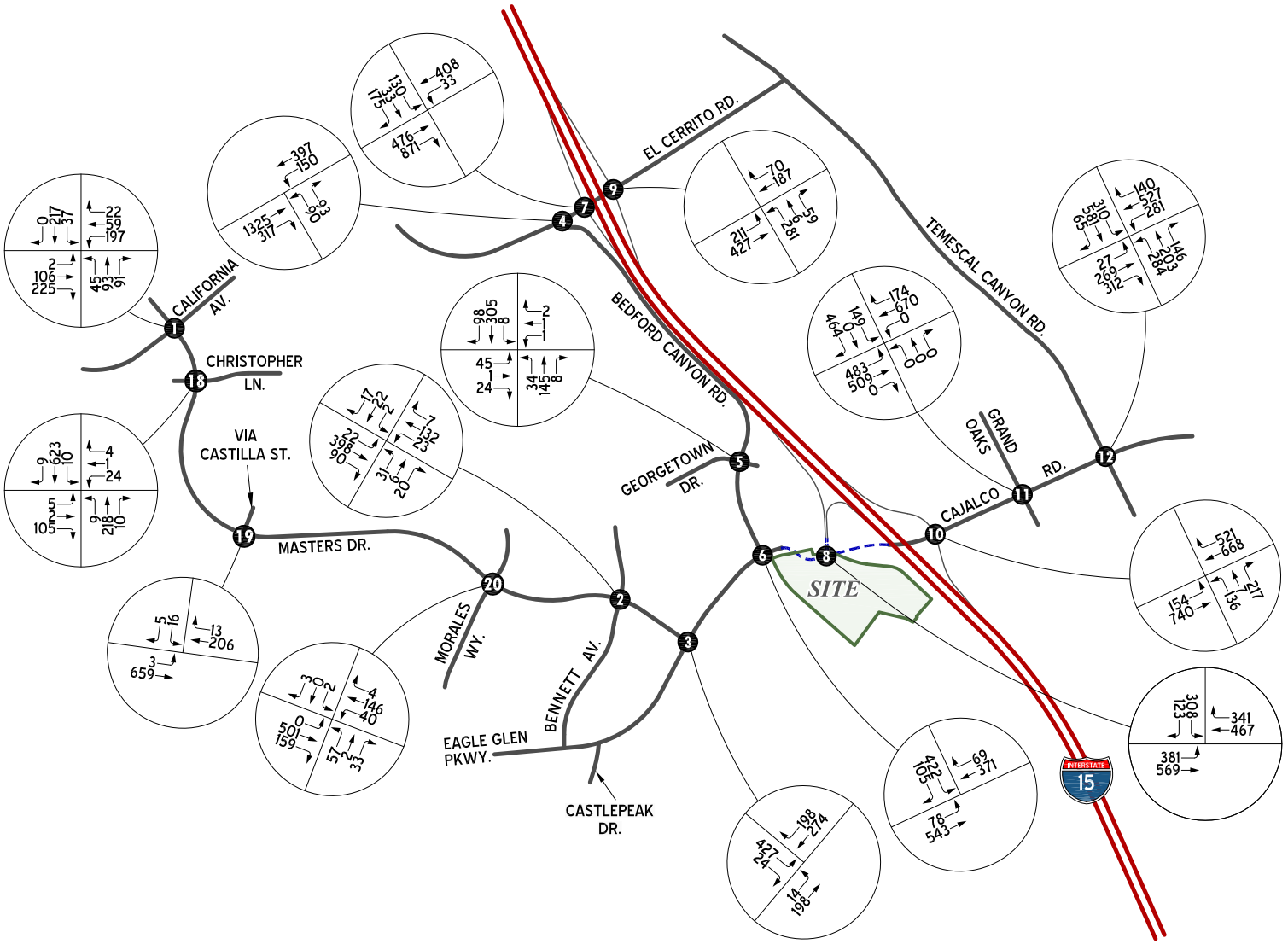
- (#) = INTERSECTION ID
- = ROADWAY CONFIGURATION DURING INTERCHANGE CONSTRUCTION

N

12254 - 002_volumes.dwg

URBAN CROSSROADS

EXHIBIT 2-5: EXISTING (2017/2018) PM PEAK HOUR INTERSECTION VOLUMES



LEGEND:

- (#) = INTERSECTION ID
- = ROADWAY CONFIGURATION DURING INTERCHANGE CONSTRUCTION

N

Existing (2017 and 2018) average daily traffic (ADT) volumes on arterial highways throughout the study area are shown on Exhibit 2-6. The ADT volumes are either based on traffic counts or have been estimated by factoring up peak hour counts. The following formula was used to estimate the daily volume for each intersection leg if daily traffic counts were not available:

PM Peak Hour (Approach Volume + Exit Volume) x 12 = Leg Volume

2.4 EXISTING (2017 AND 2018) CONDITIONS INTERSECTION OPERATIONS ANALYSIS

Existing (2017 and 2018) peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 4.2 *Intersection Capacity Analysis* of this report. The intersection operations analysis results are summarized in Table 2-1 which indicates that the intersections of Masters Drive / California Avenue (#1), Masters Drive / Christopher Lane (#18), Via Castilla Street / Masters Drive (#19), and Morales Way / Masters Drive (#20) do not operate at an acceptable level of service (LOS) during the peak hours. The intersection operations analysis worksheets are included in Appendix "2.2" of this TIA.

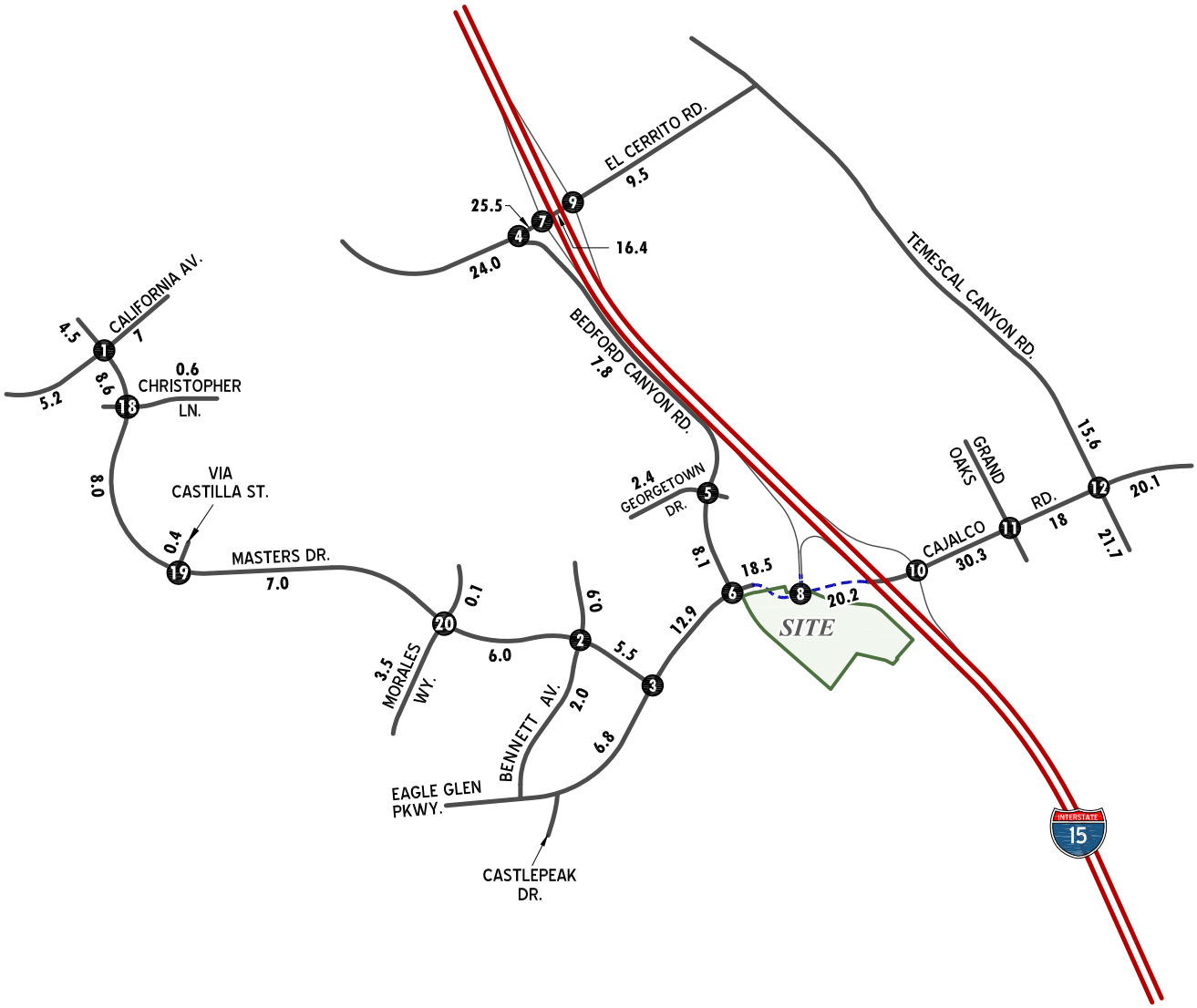
2.5 EXISTING (2017 AND 2018) CONDITIONS TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for Existing (2017 and 2018) traffic conditions are based on existing peak hour intersection turning volumes. For Existing (2017 and 2018) traffic conditions, the following unsignalized study area intersections appear to warrant traffic signals (See Appendix "2.3"):

ID	Intersection Location	Jurisdiction
1	Masters Drive / California Avenue	Corona
18	Masters Drive / Christopher Lane	Corona
20	Morales Way / Masters Drive	Corona

It should be noted that in the 2015 traffic study, the intersection of Masters Drive / Eagle Glen Parkway (#3) warrants a traffic signal under Existing (2014 and 2015) conditions and the intersection of Clementine Way / Eagle Glen Parkway (#13) did not exist. New traffic signals were recently installed at these locations. Therefore, evaluation of existing (2017 and 2018) traffic signal warrants at the intersection of Masters Drive / Eagle Glen Parkway (#3) and Clementine Way / Eagle Glen Parkway (#13) are no longer needed.

EXHIBIT 2-6: EXISTING (2017/2018) AVERAGE DAILY TRAFFIC (ADT) VOLUMES



LEGEND:

- (#) = INTERSECTION ID
- = ROADWAY CONFIGURATION DURING INTERCHANGE CONSTRUCTION
- 10.0 = VEHICLES PER DAY (1000'S)

TABLE 2-1: INTERSECTION ANALYSIS SUMMARY FOR EXISTING (2017/2018) CONDITIONS

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (Secs)		Level of Service[2]		LOS Criteria
			Northbound			Southbound			Eastbound			Westbound							
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	
1	Masters Dr. / California Av.	AWS	1	1	0	1	1	0	1	1	0	1	1	1	**82.1**	19.9	**F**	C	*C*
2	Masters Dr. / Bennett Av.	AWS	1	1	0	1	1	0	0	1!	0	0	1!	0	10.0	15.1	A	C	*C*
3	Masters Dr. / Eagle Glen Pkwy.	AWS	0	0	0	1	0	1	1	2	0	0	2	0	12.4	28.4	B	D	*D*
4	Bedford Cyn. Rd. / El Cerrito Rd.	TS	1	0	1	0	0	0	0	2	0	1	2	0	27.4	23.1	C	C	*D*
5	Bedford Cyn. Rd. / Georgetown Dr.	AWS	1	1	0	0	1	1	0	1	1>>	0	1!	0	9.7	10.3	A	B	*C*
6	Bedford Cyn. Rd. / Eagle Glen Pkwy.	TS	0	0	0	1	0	1>	1	1	0	0	2	1>	22.4	29.7	C	C	*D*
7	I-15 SB Ramps / El Cerrito Rd.	TS	0	0	0	0.5	0.5	1	0	2	0	1	2	0	14.4	19.6	B	B	*D*
8	I-15 SB Ramps / Cajalco Rd.	TS	0	0	0	1	0	1	1	1	0	0	1	1	33.2	38.1	C	D	*E*
9	I-15 NB Ramps / El Cerrito Rd.	TS	0	1!	0	0	0	0	2	1	0	0	2	0	35.1	22.4	D	C	*D*
10	I-15 NB Ramps / Cajalco Rd.	TS	0	1	1	0	0	0	1	1	0	0	1	1	27.4	21.3	C	C	*E*
11	Grand Oaks / Cajalco Rd.	TS	0	1!	0	0.5	0.5	2>	2	2	0	1	***2***	1	11.1	26.3	B	C	*D*
12	Temescal Cyn. Rd. / Cajalco Rd.	TS	2	2	1	1	2	0	1	1	1	1	3	0	35.2	44.8	D	D	*D*
13	Clementine Wy. / Eagle Glen Pkwy.	--	Future Intersection												--	--	--	--	*D*
15	Bedford Cyn. Rd. / Hudson House Dr.	--	Future Intersection												--	--	--	--	*C*
18	Masters Dr. / Christopher Ln.	AWS	1	1	0	1	1	0	0	1!	0	0	1!	0	**29.6**	**40.0**	**D**	**E**	*C*
19	Via Castilla St. / Masters Dr.	AWS	0	0	0	0	1!	0	1	1	0	0	1	0	20.5	**49.8**	C	**E**	*C*
20	Morales Wy. / Masters Dr.	AWS	0	1!	0	0	1!	0	1	1	0	1	1	0	14.1	**40.5**	B	**E**	*C*
22	Bedford Cyn. Rd. / Commercial S. Dwy.	--	Future Intersection												--	--	--	--	*C*
23	Bedford Cyn. Rd. / Commercial Main Dwy.	--	Future Intersection												--	--	--	--	*C*
24	Bedford Cyn. Rd. / Commercial RIRO Dwy.	--	Future Intersection												--	--	--	--	*C*

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; > = Right-Turn Overlap Phasing; 1! = Shared Left-Through-Right turn lane; d= Defacto Right Turn Lane;

1 = Lane reduction during interchange construction

[2] Per the Highway Capacity Manual 6th Edition (HCM6), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. Delay and level of service is calculated using Synchro 10.1 analysis software.

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[3] TS = Traffic Signal; CSS = Cross-street Stop; AWS = All-Way Stop

R:\UXRjobs_12100-12500\12554\Excel\[12554 - Report.xlsx]2-1

This page intentionally left blank.

3.0 PROJECTED FUTURE TRAFFIC

Future traffic from the Project has been estimated for interim year (2021) conditions, horizon year 2035 conditions.

Future 2021 traffic is represented by the combination of existing traffic, ambient growth (total of 8%), approved Arantine Hills Specific Plan traffic, and increases in traffic volumes associated with the added Project land uses.

The horizon year 2035 forecasts are derived from the approved Arantine Hills Specific Plan Traffic Assessment (November 2018).

3.1 PROJECT TRAFFIC

3.1.1 PROJECT TRIP GENERATION

Table 3-1 presents overall Project trip generation. Bedford Marketplace is anticipated to generate a total of approximately 7,014 external trips per day with 394 AM peak hour external trips and 686 PM peak hour external trips. Of the total trips for Bedford Marketplace, the Project will generate approximately 2,061 external trips per day with 281 AM peak hour external trips and 285 PM peak hour external trips.

The ITE Trip Generation manual is a nationally recognized source for estimating site specific trip generation. The ITE 2017 Trip Generation manual (10th Edition) trip generation rates are used to estimate Project trip ends generated by each individual use, which is then considered in combination with the mix of site uses. Internal interaction represents the trips captured internally because of the opportunity to visit various land uses without using the arterial roadway system (for example, exiting the hotel in the morning and stopping at the gas station before leaving the Bedford Marketplace property). Internal capture calculations for each use are indicated on Table 1.

In addition to the internal capture adjustment, trips generated by the commercial site are adjusted due to interactions with nearby residential areas. Due to the location of Bedford Marketplace, some of the existing and future residential trips are diverted from the surrounding arterial system. These trips represent travelers who interact with a shop, service, or restaurant and then continue traveling elsewhere. To understand the traffic volume effects at study area intersections, estimates of diverted pass-by trips are necessary.

As shown on Table 3-1, in comparison to the approved commercial trip generation in the Arantine Hills Traffic Assessment (November 2018), the Project is anticipated to generate an additional 2,061 external trips per day with 281 AM peak hour external trips and 285 PM peak hour external trips.

3.1.2 PROJECT TRIP DISTRIBUTION

Trip distribution is the process of identifying the probable destinations, directions or traffic routes that will be utilized by Project traffic.

TABLE 3-1: BEDFORD MARKETPLACE PROJECT TRIP GENERATION SUMMARY

Trip Generation Rates[1]										
	ITE LU		AM Peak Hour			PM Peak Hour			
Land Use	Code	Quantity[2]	In	Out	Total	In	Out	Total	Daily
Hotel	310	135 RM	0.36	0.26	0.62	0.358	0.372	0.73	12.23
Health/Fitness Club	492	38 TSF	0.67	0.64	1.31	1.97	1.48	3.45	30.00
Day Care Center	565	9.99 TSF	5.83	5.17	11.00	5.23	5.89	11.12	47.62
Retail Shopping Center	820	51 TSF	0.58	0.36	0.94	1.83	1.98	3.81	37.75
Walk-in Bank	911	3 TSF	3.26	2.37	5.64	5.340	6.790	12.13	59.33
Drive-in Bank	912	3.562 TSF	5.51	3.99	9.50	10.225	10.225	20.45	100.03
Quality Restaurant	931	13.2 TSF	0.37	0.37	0.73	5.23	2.57	7.80	83.84
High Turnover (Sit-Down) Restaurant	932	5.826 TSF	5.47	4.47	9.94	6.06	3.71	9.77	112.18
Coffee/Donut Shop with Drive-Through Window	937	2.2 TSF	45.38	43.61	88.99	21.69	21.69	43.38	820.38
Gasoline/Service Station	944	18 VFP	5.14	5.14	10.28	7.015	7.015	14.03	172.01
Automated Car Wash	948	3.6 TSF	0.30	0.30	0.60	7.10	7.10	14.20	142.00

Trip Generation Results									
	ITE LU		AM Peak Hour			PM Peak Hour			
Land Use	Code	Quantity[2]	In	Out	Total	In	Out	Total	Daily
Hotel	310	135 RM	49	35	84	48	50	98	1,651
- Internal Interaction[4]			*(4)*	*(8)*	*(12)*	*(15)*	*(13)*	*(28)*	*(347)*
Health/Fitness Club	492	38 TSF	25	24	49	75	56	131	1,140
- Internal Interaction[4]			*(4)*	*(7)*	*(11)*	*(7)*	*(9)*	*(16)*	*(194)*
- Eagle Glen Diverted Trips[3]			*(3)*	*(3)*	*(6)*	*(10)*	*(10)*	*(20)*	*(171)*
- Arantine Hills Residential Interaction/Diverted Trips			*(6)*	*(4)*	*(10)*	*(7)*	*(12)*	*(19)*	*(194)*
Day Care Center	565	9.99 TSF	58	52	110	52	59	111	476
- Internal Interaction[4]			*(10)*	*(15)*	*(25)*	*(5)*	*(10)*	*(15)*	*(86)*
- Eagle Glen Diverted Trips[3]			*(9)*	*(9)*	*(18)*	*(9)*	*(9)*	*(18)*	*(81)*
- Arantine Hills Residential Interaction/Diverted Trips			*(14)*	*(8)*	*(22)*	*(6)*	*(10)*	*(16)*	*(81)*
Retail	820	51 TSF	30	18	48	93	101	194	1,925
- Internal Interaction[4]			*(6)*	*(3)*	*(9)*	*(14)*	*(16)*	*(30)*	*(327)*
- Eagle Glen Diverted Trips[3]			*(4)*	*(3)*	*(7)*	*(10)*	*(9)*	*(19)*	*(250)*
- Arantine Hills Residential Interaction/Diverted Trips			*(6)*	*(4)*	*(10)*	*(11)*	*(18)*	*(29)*	*(347)*
Walk-in Bank	911	3 TSF	10	7	17	16	20	36	178
Drive-in Bank	912	3 TSF	17	12	29	31	31	62	300
- Internal Interaction[4]			*(5)*	*(5)*	*(10)*	*(4)*	*(8)*	*(12)*	*(81)*
- Eagle Glen Diverted Trips[3]			*(2)*	*(1)*	*(3)*	*(8)*	*(7)*	*(15)*	*(53)*
- Arantine Hills Residential Interaction/Diverted Trips			*(6)*	*(4)*	*(10)*	*(5)*	*(9)*	*(14)*	*(86)*
Quality Restaurant	931	13.2 TSF	5	5	10	69	34	103	1,107
High Turnover (Sit-Down) Restaurant	932	5.826 TSF	32	26	58	35	22	57	654
- Internal Interaction[4]			*(9)*	*(6)*	*(15)*	*(26)*	*(14)*	*(40)*	*(423)*
- Eagle Glen Diverted Trips[3]			*(3)*	*(3)*	*(6)*	*(12)*	*(11)*	*(23)*	*(211)*
- Arantine Hills Residential Interaction/Diverted Trips			*(9)*	*(5)*	*(14)*	*(9)*	*(15)*	*(24)*	*(317)*
Coffee/Donut Shop with Drive-Through Window	937	2.2 TSF	100	96	196	48	48	96	1,805
- Internal Interaction[4]			*(25)*	*(21)*	*(46)*	*(12)*	*(12)*	*(24)*	*(433)*
- Eagle Glen Diverted Trips[3]			*(15)*	*(15)*	*(30)*	*(10)*	*(10)*	*(20)*	*(325)*
- Arantine Hills Residential Interaction/Diverted Trips			*(25)*	*(14)*	*(39)*	*(7)*	*(7)*	*(14)*	*(307)*
Gasoline/Service Station	944	18 VFP	93	93	186	126	126	252	3,096
Automated Car Wash	948	3.6 TSF	1	1	2	26	26	52	511
- Internal Interaction[4]			*(20)*	*(18)*	*(38)*	*(23)*	*(25)*	*(48)*	*(649)*
- Eagle Glen Diverted Trips[3]			*(8)*	*(8)*	*(16)*	*(9)*	*(8)*	*(17)*	*(217)*
- Arantine Hills Residential Interaction/Diverted Trips			*(24)*	*(14)*	*(38)*	*(17)*	*(28)*	*(45)*	*(649)*
SUBTOTAL TRIP ENDS FOR ALL LAND USES			**420**	**369**	**789**	**619**	**573**	**1,192**	**12,843**
- Internal Interaction Total[4]			*(83)*	*(83)*	*(166)*	*(106)*	*(107)*	*(213)*	*(2,540)*
- Eagle Glen Diverted Total[3]			*(44)*	*(42)*	*(86)*	*(68)*	*(64)*	*(132)*	*(1,308)*
- Arantine Hills Residential Interaction/Diverted Total			*(90)*	*(53)*	*(143)*	*(62)*	*(99)*	*(161)*	*(1,981)*
TOTAL PROJECT EXTERNAL TRIPS			**203**	**191**	**394**	**383**	**303**	**686**	**7,014**

	ITE LU		AM Peak Hour			PM Peak Hour			
EXTERNAL TRIP GENERATION COMPARISON	Code	Quantity[2]	In	Out	Total	In	Out	Total	Daily
80 TSF Commercial (November 2018 Analysis)			69	44	113	214	187	401	4,953
Bedford Marketplace (June 2019)			203	191	394	383	303	686	7,014
Net Increase			**134**	**147**	**281**	**169**	**116**	**285**	**2,061**

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, 10th Edition (2017).
Daily Rate for ITE Land Use 948 (Car Wash) has been estimated (PMx10); AM & Daily Rates for ITE LU Code 911 has been estimated based on ITE LU Code 912

[2] RM = Occupied Rooms; TSF = Thousand Square Feet; VFP = Vehicle Fueling Positions

[3] Source: ITE Trip Generation Handbook, 3rd Edition.

[4] Internal capture estimated based on NCHRP 8-51.

R:\UXRjobs_12100-12500\12554\Excel\[12554 - Report.xlsx]3-1

The potential interaction between the planned land uses and surrounding regional access routes are considered to identify the routes where Project traffic would travel. The Project trip distribution was developed based on anticipated travel patterns to and from the Project site and are consistent with the commercial trip distribution patterns reviewed and approved by the City as part of the 2015 and 2018 studies. The proposed Project does not cause any change to the previously approved trip distribution patterns included in the *Arantine Hills Modified Project Traffic Study*, dated September 11, 2015 and *Arantine Hills Specific Plan Amendment No. 2 Traffic Assessment*, dated November 12, 2018. Recent select zone traffic assignments from the recently updated City of Corona traffic model were also reviewed.

The trip distribution pattern is heavily influenced by the geographical location of the site, the location of surrounding uses, and the proximity to the arterial network and regional freeway system. Exhibit 3-1 include the Project distribution used in this study.

3.1.3 MODAL SPLIT

The traffic-reducing potential of public transit has not been considered in this report. Essentially the traffic projections are "conservative" in that public transit might be able to reduce the traffic volumes.

3.1.4 PROJECT TRIP ASSIGNMENT

The assignment of traffic from the Project area to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project.

Based on the identified Project traffic generation and trip distribution patterns, the increase in AM and PM peak hour volumes generated by the Project are shown on Exhibit 3-2 and Exhibit 3-3, respectively.

3.2 TOTAL FUTURE TRAFFIC

This analysis assesses the following future traffic conditions.

- Interim Year (2021) Without Project conditions
- Interim Year (2021) With Project conditions
- Horizon Year 2035 Without Project Conditions
- Horizon Year 2035 With Project Conditions

Interim Year (2021) Without Project conditions AM and PM peak hour intersection turning movement volumes are shown on Exhibit 3-4 and Exhibit 3-5, respectively. Interim Year (2021) With Project conditions AM and PM peak hour intersection turning movement volumes are shown on Exhibit 3-6 and Exhibit 3-7, respectively.

Horizon Year 2035 Without Project Conditions AM and PM peak hour intersection turning movement volumes are shown on Exhibit 3-8 and 3-9, respectively. Horizon Year 2035 With Project Conditions AM and PM peak hour intersection turning movement volumes are shown on Exhibit 3-10 and Exhibit 3-11, respectively.

EXHIBIT 3-1: BEDFORD MARKETPLACE PROJECT (EXTERNAL) TRIP DISTRIBUTION PATTERN

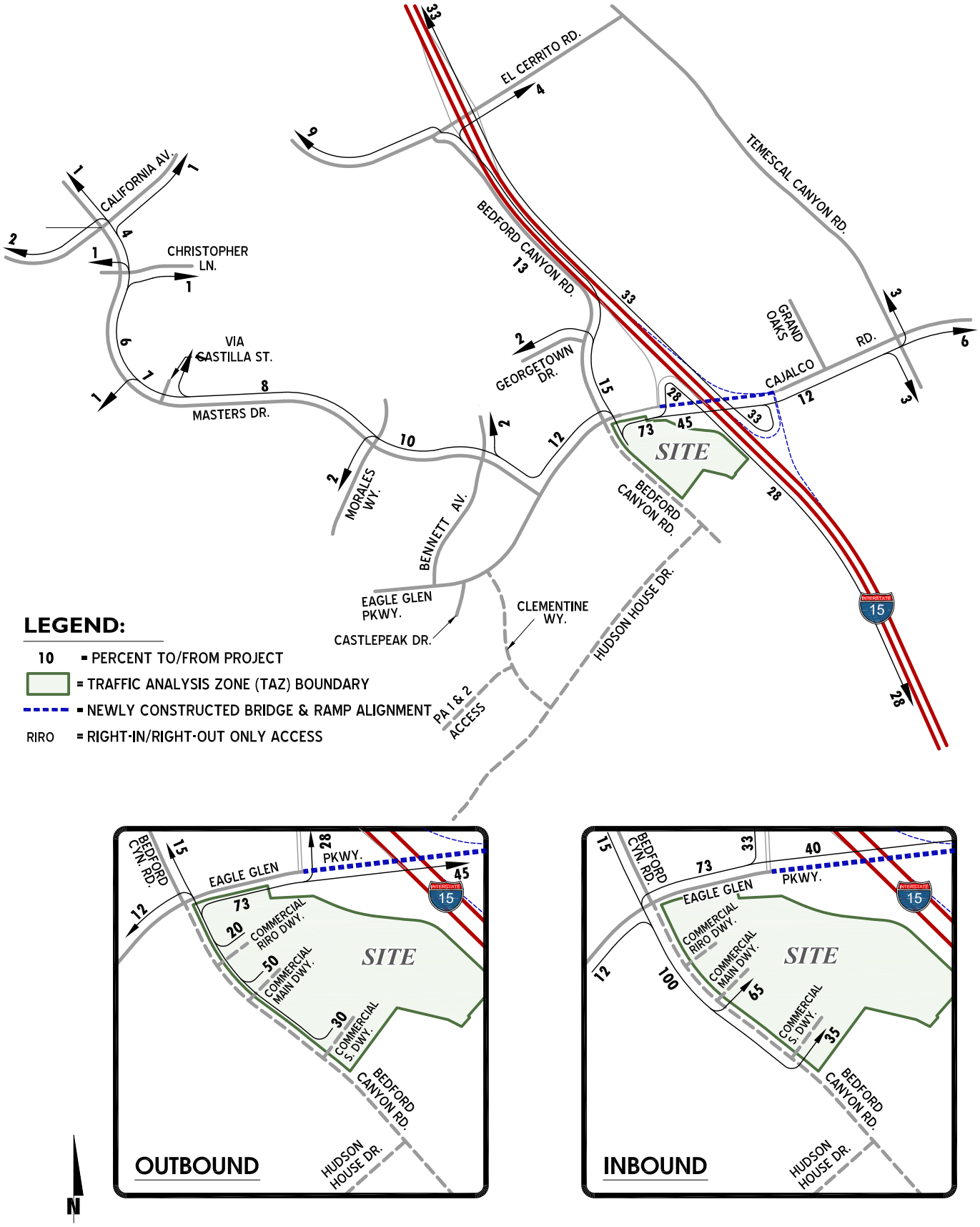
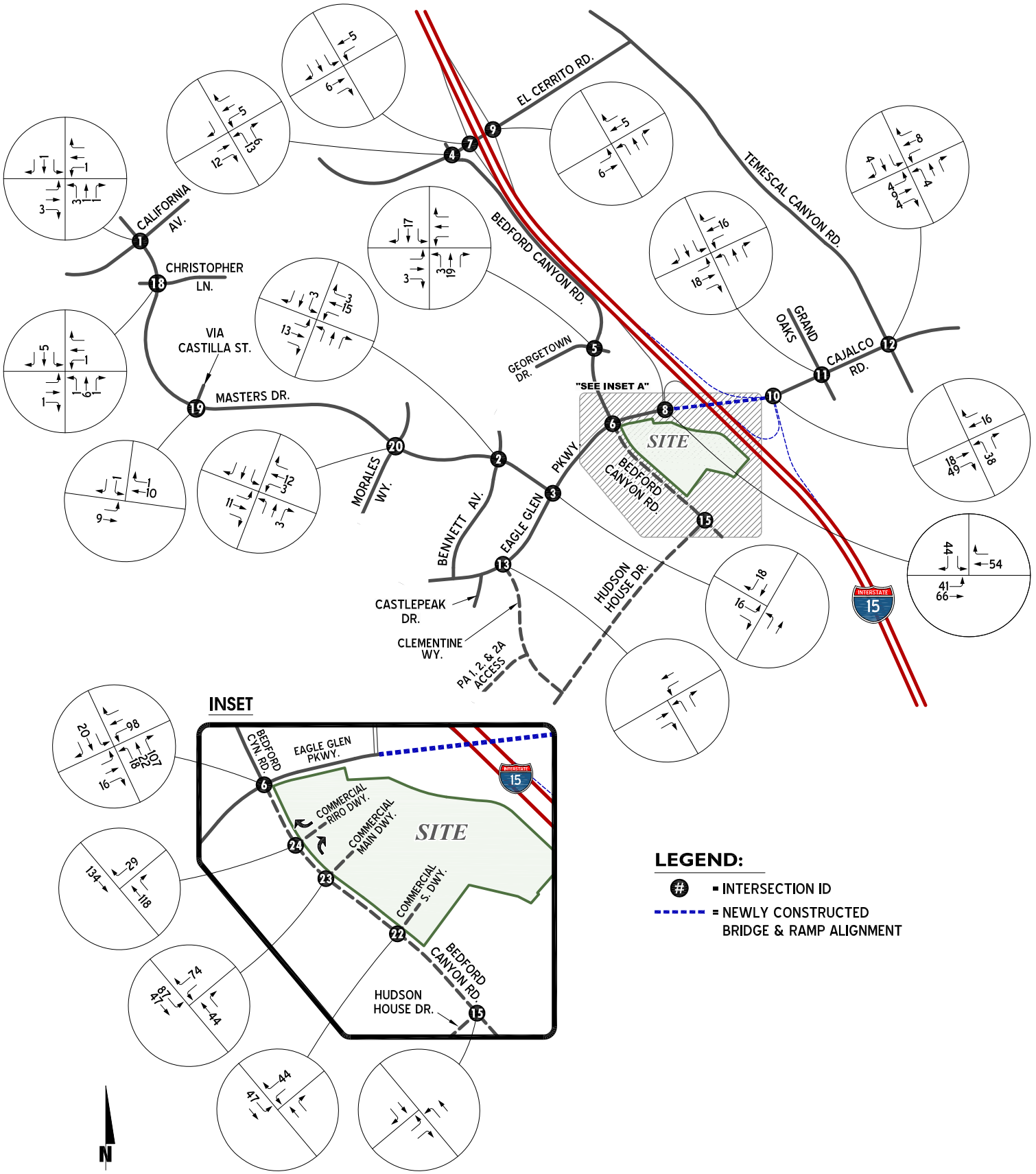


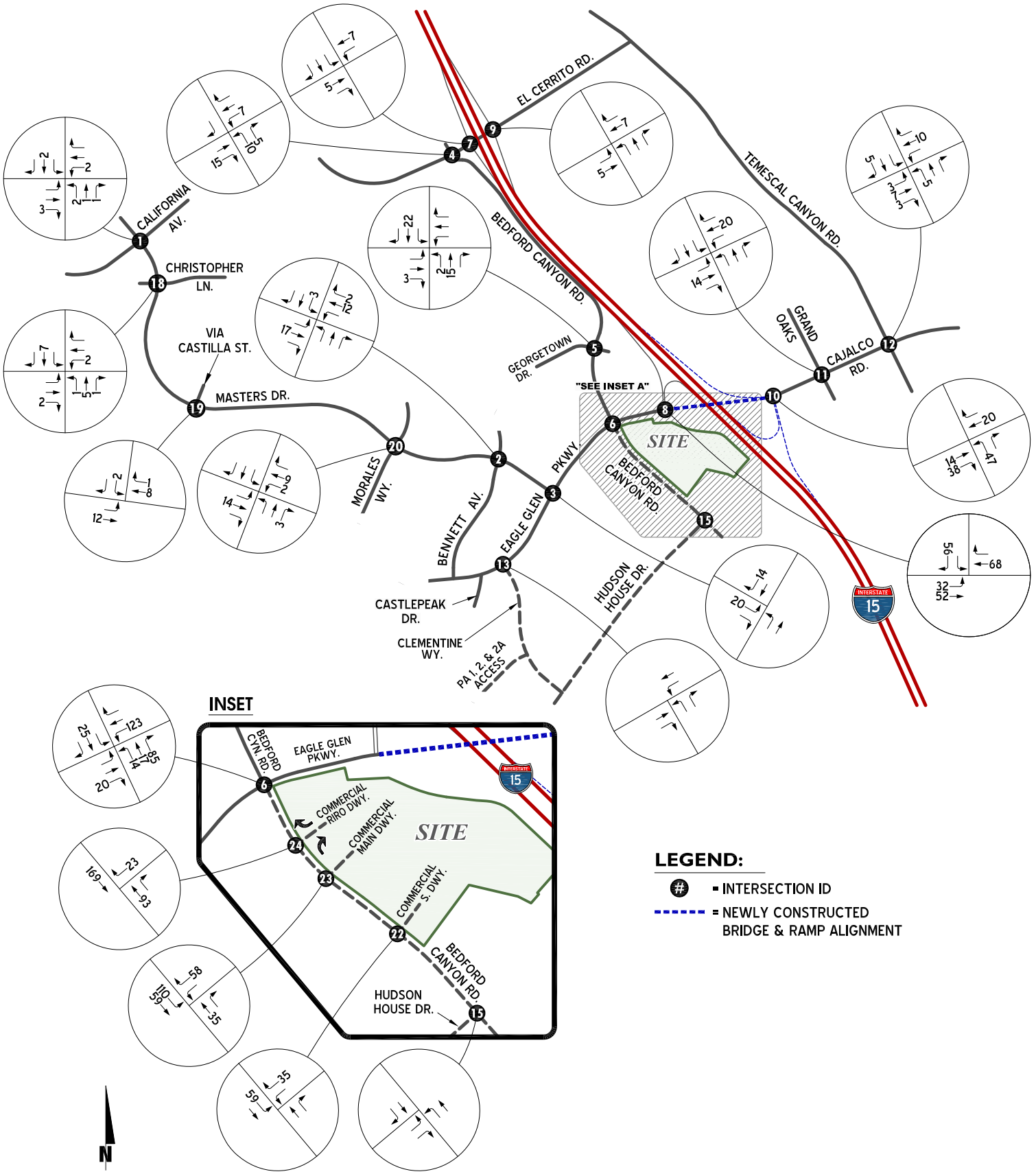
EXHIBIT 3-2: PROJECT ONLY VOLUME (EXTERNAL TRIPS) NET INCREASES IN COMPARISON TO 80 TSF RETAIL AM PEAK HOUR



12554 - 002_volumes.dwg

URBAN CROSSROADS

EXHIBIT 3-3: PROJECT ONLY VOLUME (EXTERNAL TRIPS) NET INCREASES IN COMPARISON TO 80 TSF RETAIL PM PEAK HOUR



12554 - 002_volumes.dwg

URBAN CROSSROADS

EXHIBIT 3-4: INTERIM YEAR 2021 WITHOUT PROJECT
AM PEAK HOUR INTERSECTION VOLUMES

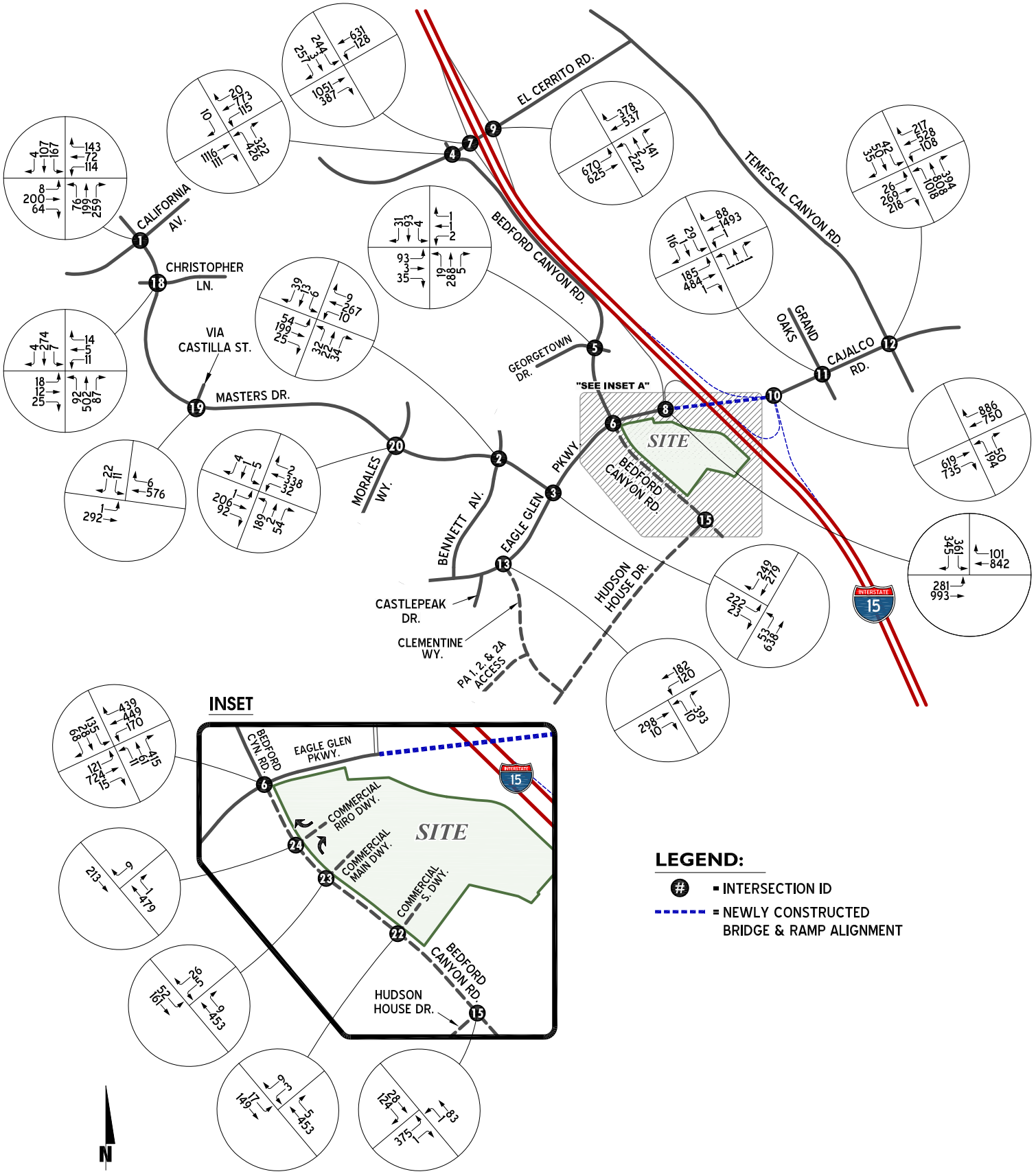


EXHIBIT 3-5: INTERIM YEAR 2021 WITHOUT PROJECT
PM PEAK HOUR INTERSECTION VOLUMES

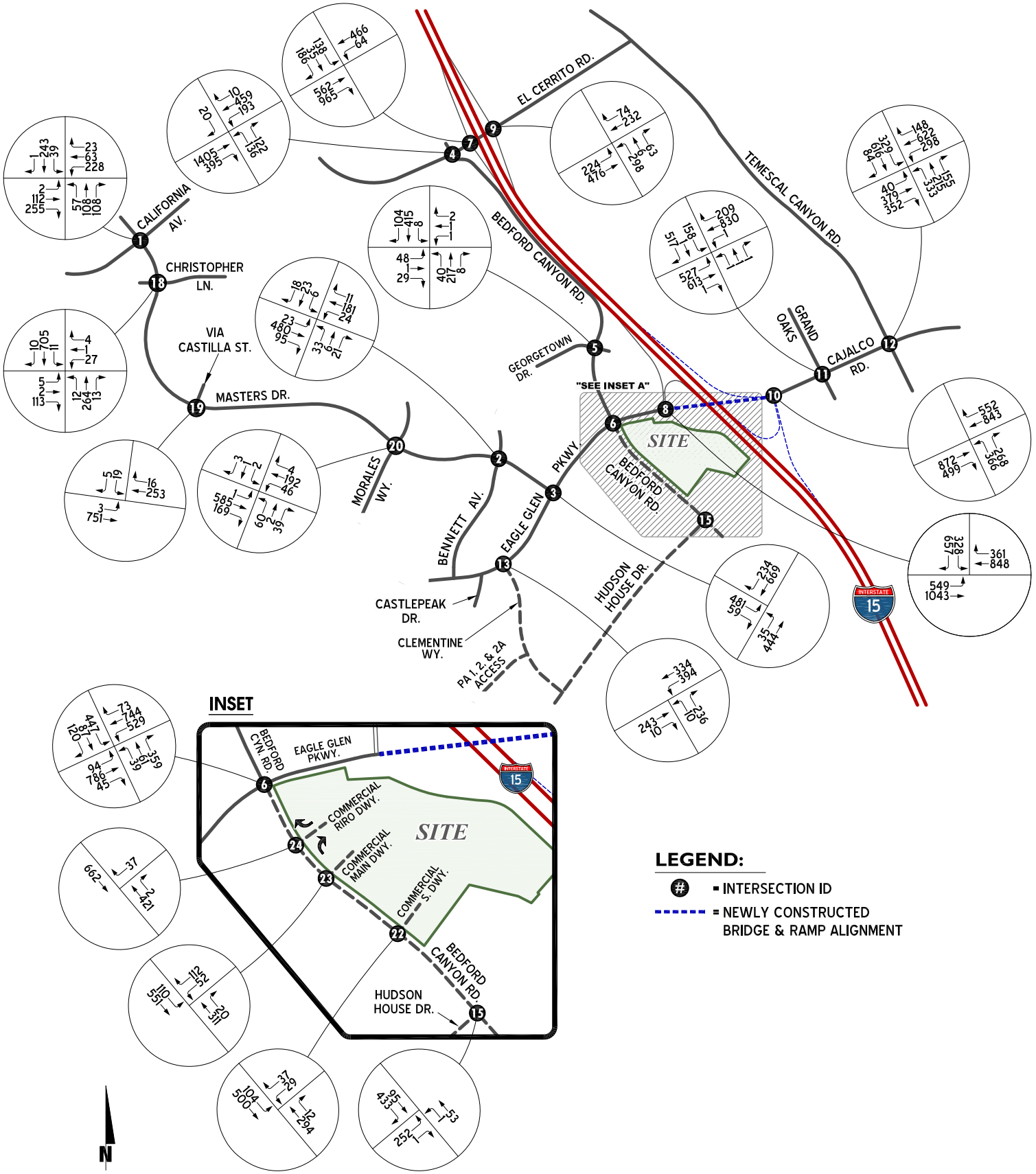
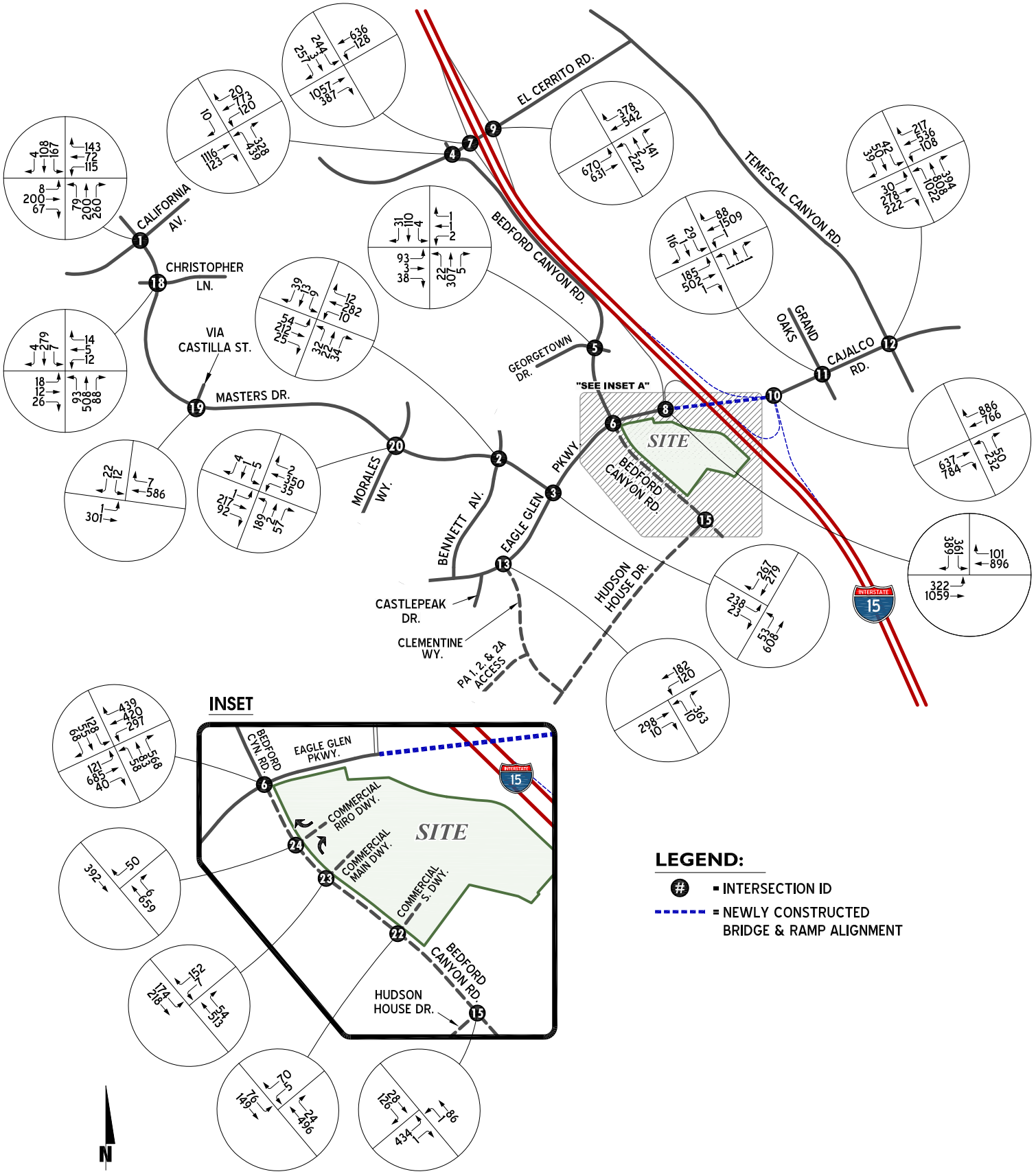


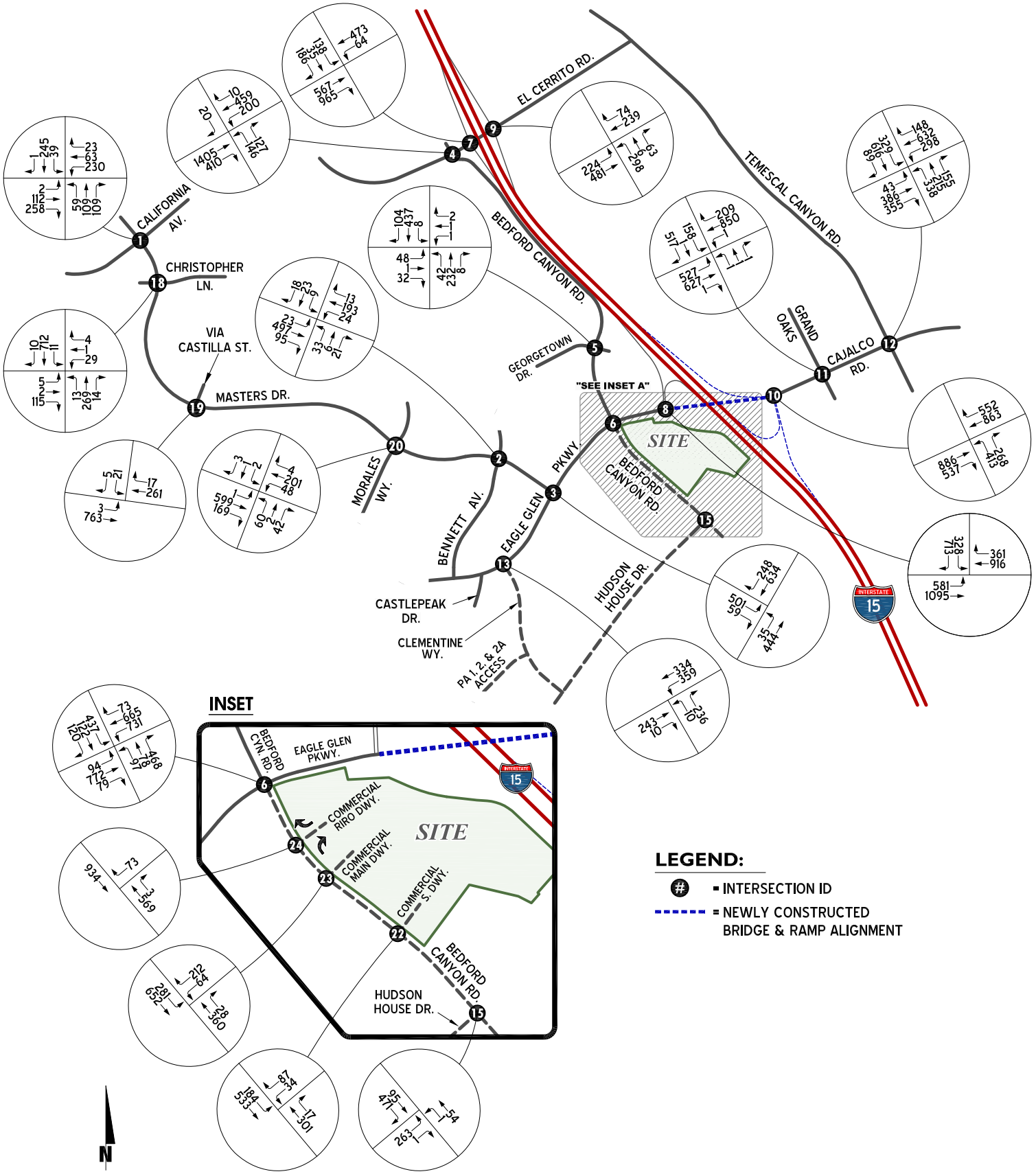
EXHIBIT 3-6: INTERIM YEAR 2021 WITH PROJECT AM PEAK HOUR INTERSECTION VOLUMES



12554 - 002_volumes.dwg

URBAN CROSSROADS

EXHIBIT 3-7: INTERIM YEAR 2021 WITH PROJECT PM PEAK HOUR INTERSECTION VOLUMES



12554 - 002_volumes.dwg

URBAN CROSSROADS

3.3 SITE ACCESS IMPROVEMENTS

Access in and out of Bedford Marketplace occurs at three existing driveways along Bedford Canyon Road south of Eagle Glen Parkway/Cajalco Road. The northerly driveway is limited to right-in right-out (RIRO) conditions, without an opening of the median on Bedford Canyon Road. It serves as a convenient exit for vehicles leaving the Gas Station and Automated Car Wash, bound for Eagle Glen Parkway/Cajalco Road. The RIRO driveway also accommodates entering vehicles from northbound on Bedford Canyon Road.

The main driveway to Bedford Marketplace is located at a mid-point along the site frontage to Bedford Canyon Road. It is a full access location, serving left and right turns to and from Bedford Canyon Road with traffic signal control. With additional traffic generated by the Project, the existing southbound left turn lane serving the main driveway to Bedford Marketplace is recommended to be extended to provide 200 feet of vehicle queuing.

The southerly driveway to Bedford Marketplace is also a full access location, serving left and right turns to and from Bedford Canyon Road with cross-street stop sign control of the exiting vehicles. At this location, the existing southbound left turn lane is recommended to be extended to provide 150 feet of vehicle queuing with to accommodate the additional traffic generated by the Project.

An efficient network of on-site driveways provides connectivity to all access points and facilitates the internal flow of activity between the variety of land uses.

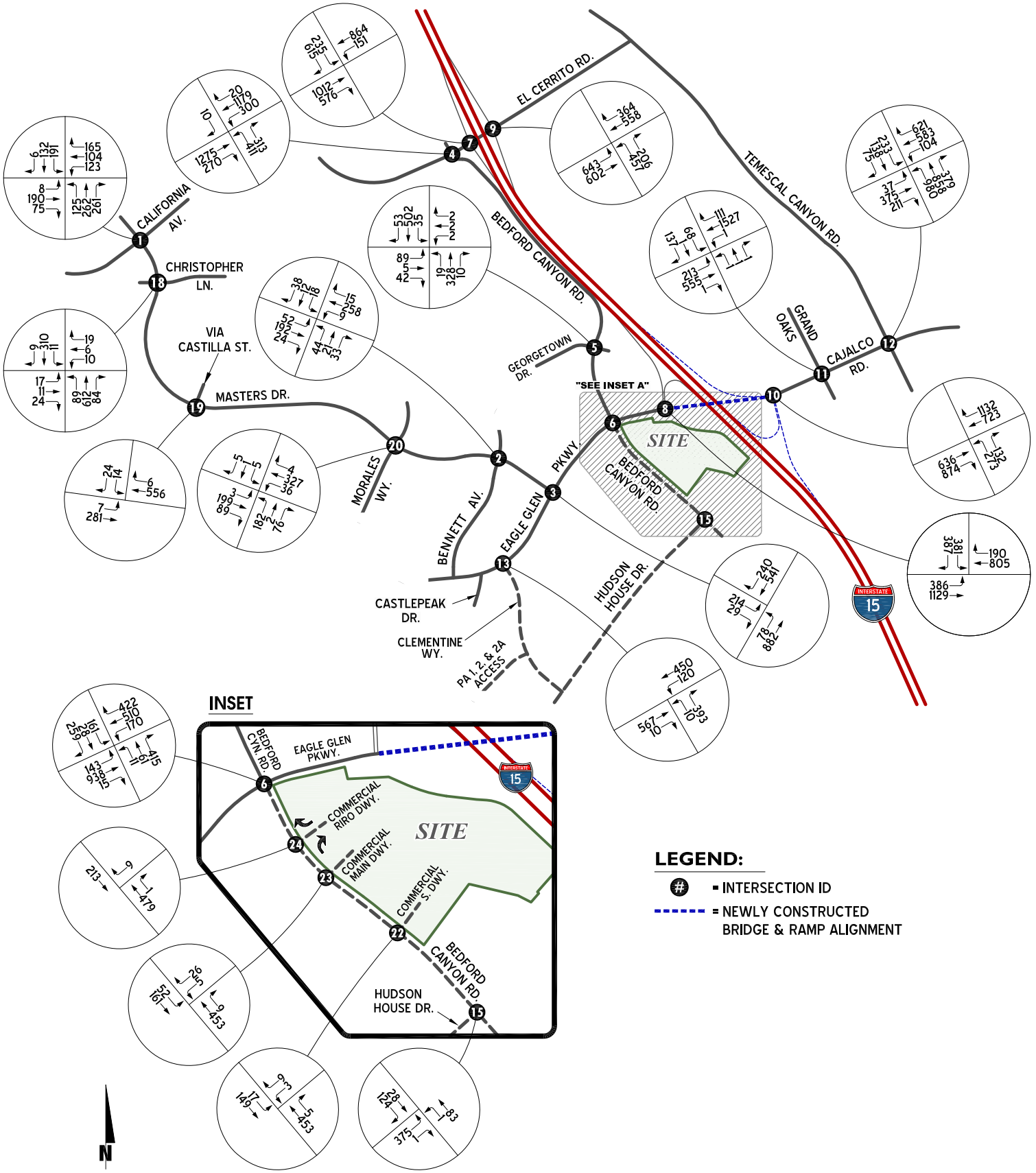
In conjunction with approved 80 TSF commercial, the following site access provisions were included as follows, and remain unchanged with the Project:

- Restrict the intersection of Bedford Canyon Road / Commercial RIRO Driveway (#24) to a right-in/right-out only intersection
- Install a traffic signal at the Bedford Canyon Road / Commercial Main Driveway (#23).
- Provide a well-integrated network of on-site driveways to facilitate the internal flow of activity between the variety of Project land uses.
- Sight distance at each project access driveway should be reviewed with respect to Caltrans and City of Corona sight distance standards at the time of preparation of final grading, landscape and street improvement plans.

The Project generates the need for the following site access improvements as illustrated on Exhibit 3-12:

- Extend the existing southbound left turn lane at Bedford Canyon Road / Commercial Main Driveway (#23) to provide 200 ft. storage length.
- Extend the existing southbound left turn lane at Bedford Canyon Road / Commercial South Driveway (#22) to provide a minimum of 150 ft. storage length.
- On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the Project, along with any modifications to sight distance.

EXHIBIT 3-8: HORIZON YEAR 2035 WITHOUT PROJECT
AM PEAK HOUR INTERSECTION VOLUMES



12554 - 002_volumes.dwg

URBAN CROSSROADS

EXHIBIT 3-9: HORIZON YEAR 2035 WITHOUT PROJECT
PM PEAK HOUR INTERSECTION VOLUMES

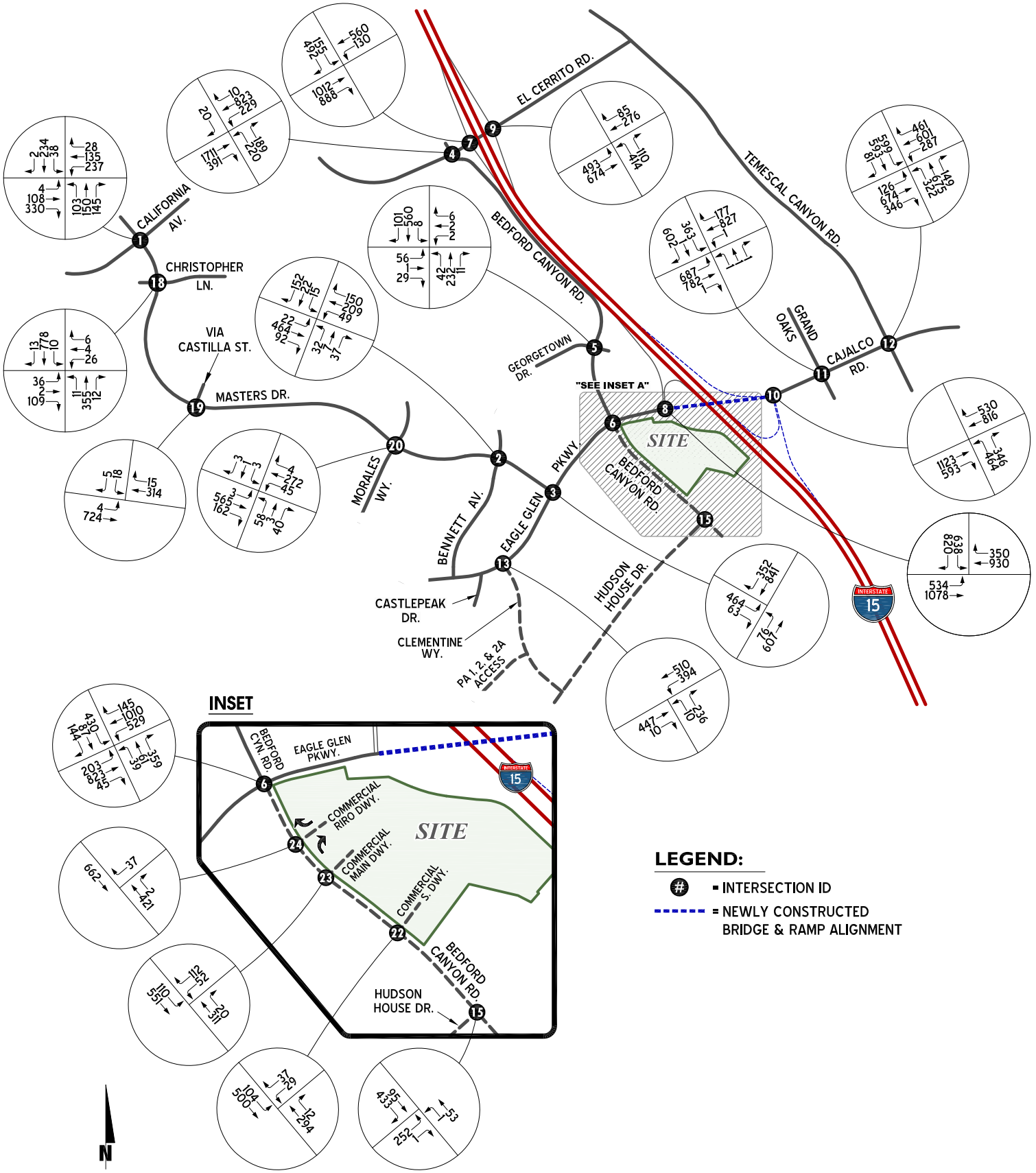
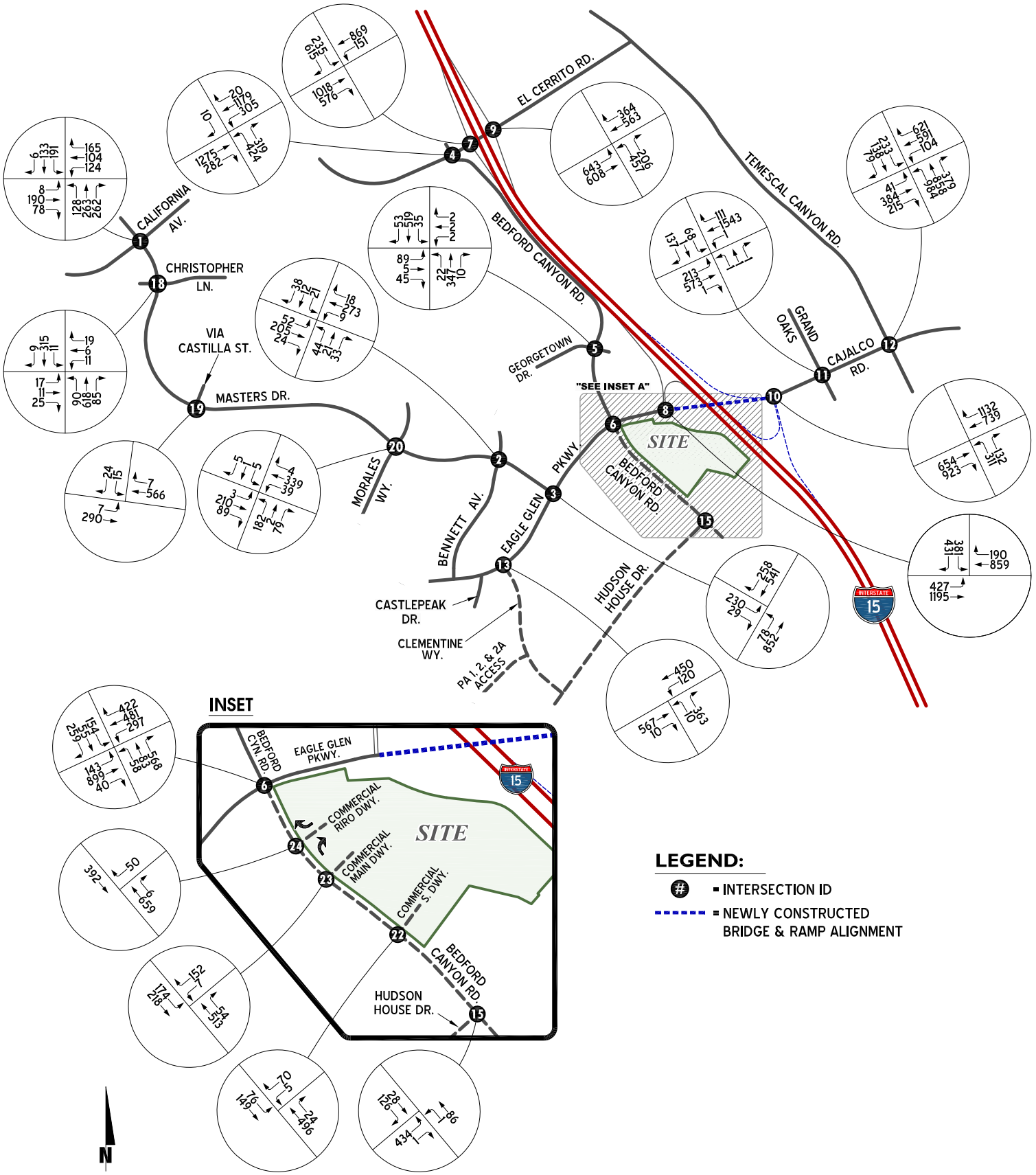


EXHIBIT 3-10: HORIZON YEAR 2035 WITH PROJECT AM PEAK HOUR INTERSECTION VOLUMES



12554 - 002_volumes.dwg

URBAN CROSSROADS

EXHIBIT 3-11: HORIZON YEAR 2035 WITH PROJECT PM PEAK HOUR INTERSECTION VOLUMES

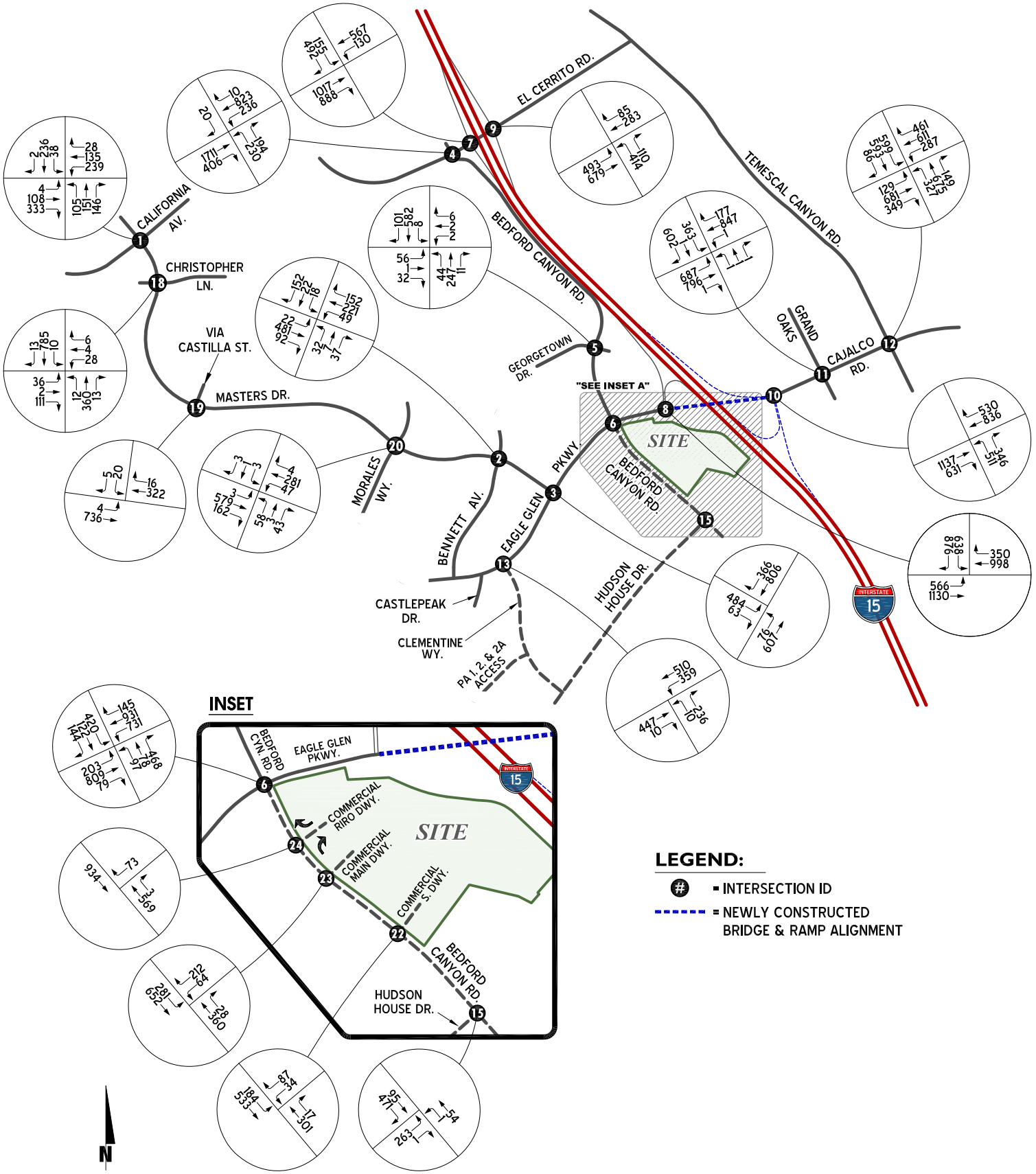
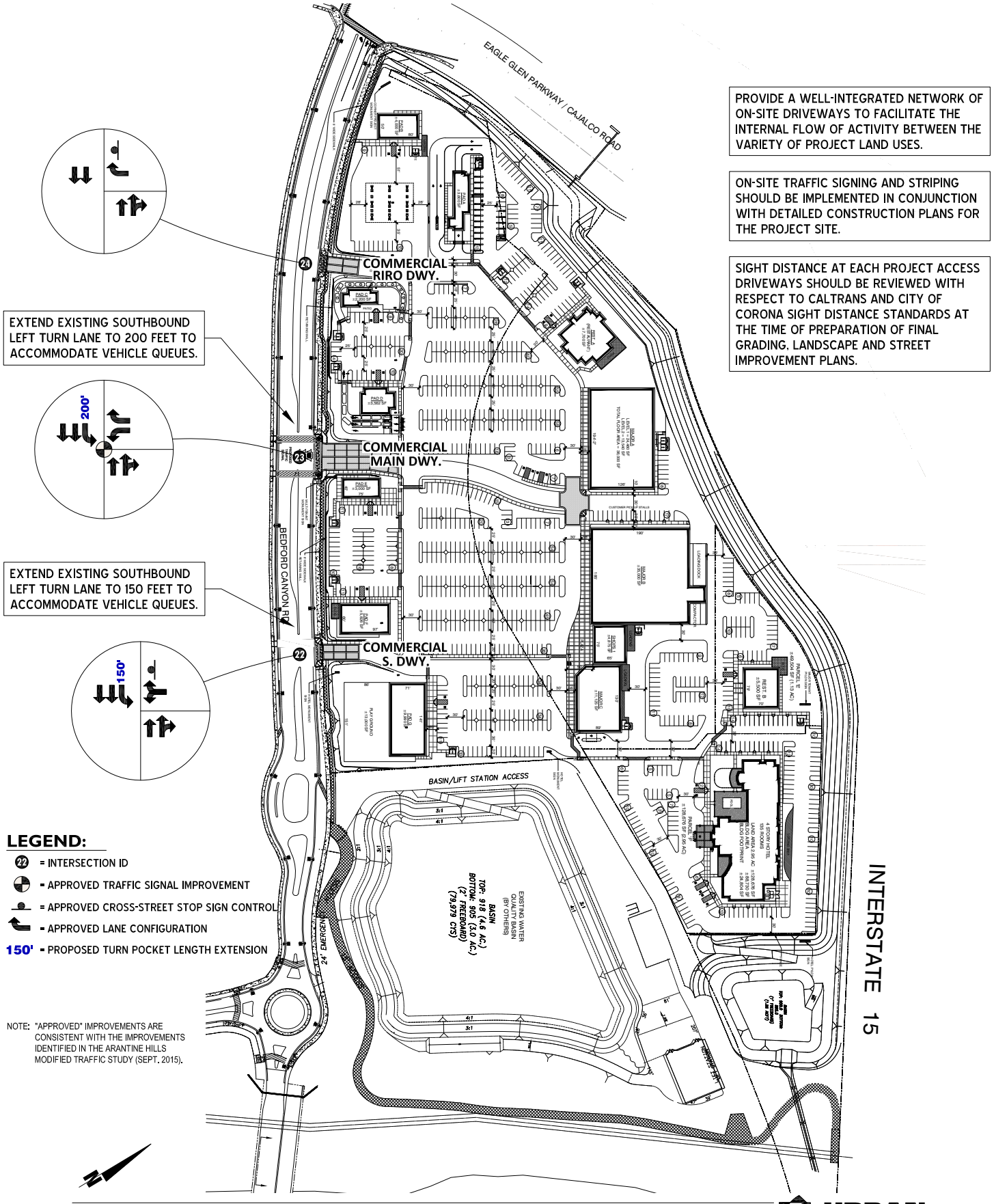


EXHIBIT 3-12: ACCESS IMPROVEMENTS



12554 - 001_study area.dwg

URBAN CROSSROADS

3.4 INTERNAL CIRCULATION

The internal network of driveways and parking aisles shown on Exhibit 3-12 has been refined in response to City of Corona technical comments. The three driveway entries to the site are connected internally by a 30' north/south drive aisle (westerly drive aisle), and movement along this spine driveway is not interrupted by direct access to parking stalls.

At each of the three driveway entries, an uninterrupted travel way is provided between the street and the westerly drive aisle. The central driveway entry (commercial main driveway) accommodates two inbound and two outbound lanes. Entering vehicles which turn left or right at the westerly drive aisle are therefore served by separate travel lanes.

Approximately six vehicles per lane can be stored within each of the inbound and outbound lanes at the three driveway entries to the site without affecting Bedford Canyon Road traffic flows. The design of the site entries and internal drive aisles minimizes conflict points which would interfere with key traffic movements. Each of the three driveway entries extends into the site beyond the westerly drive aisle and connects to other parallel internal driveways.

The central parking lots provide parking spaces suited to travelers who wish to access multiple shops, restaurants, health / fitness club, day care center, and banks. The central parking lots are located east of the westerly drive aisle and west of the central north/south drive aisle which is adjacent to the major retail buildings. Vehicles turn into parking aisles which in turn provide direct access to parking stalls. Parking spaces are also located near Pads A, B, C, D, and E, in addition to the hotel, providing convenient access to these establishments.

Pad C and Pad D are located south of the northerly right in / right out driveway, in an area of the parking lot that is separated from the main parking lot area with two internal drive aisle openings. Entry to the Pad C and Pad D drive-thru aisles is provided by two separate parking aisles from the westerly drive aisle. For Pad D, the exiting drive-thru lanes connect directly to the westerly drive aisle. Parking is also provided in this area for visitors who may decide to park and enter Pad C and Pad D on foot.

This page intentionally left blank.

4.0 METHODOLOGIES

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report. The methodologies described are generally consistent with the City of Corona traffic impact study guidelines.

4.1 LEVEL OF SERVICE

Traffic operations of roadway facilities are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic flow based on several factors such as speed, travel time, delay, and freedom to maneuver. Six levels are typically defined ranging from LOS A, representing completely free-flow conditions, to LOS F, representing breakdown in flow resulting in stop-and-go conditions. LOS E represents operations at or near capacity, an unstable level where vehicles are operating with the minimum spacing for maintaining uniform flow.

4.2 INTERSECTION CAPACITY ANALYSIS

The definitions of LOS for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. The *Highway Capacity Manual* (HCM) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. The HCM uses different procedures depending on the type of intersection control.

The following peak hours were selected for analysis:

- Weekday AM Peak Hour (peak hour between 7:00 AM and 9:00 AM)
- Weekday PM Peak Hour (peak hour between 4:00 PM and 6:00 PM)

4.2.1 SIGNALIZED INTERSECTIONS

The City of Corona requires signalized intersection operations analysis based on the methodology described in Chapter 18 and Chapter 31 of the HCM 6th Edition. Intersection LOS operations are based on an intersection's average control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. For signalized intersections LOS is directly related to the average control delay per vehicle and is correlated to a LOS designation as described in Table 4-1.

Study area intersections have been analyzed using the software package Synchro (Version 10). Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in the Chapter 18 of the HCM. Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length.

TABLE 4-1: SIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay (Seconds), V/C ≤ 1.0	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Operations with very low delay occurring with favorable progression and/or short cycle length.	0 to 10.00	A	F
Operations with low delay occurring with good progression and/or short cycle lengths.	10.01 to 20.00	B	F
Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.01 to 35.00	C	F
Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.01 to 55.00	D	F
Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.01 to 80.00	E	F
Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	80.01 and up	F	F

Source: HCM 6th Edition

The level of service and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network. The LOS analysis for signalized intersections has been performed using optimized signal timing for existing traffic conditions. Signal timing optimization has considered pedestrian safety and signal coordination requirements. Appropriate time for pedestrian crossings has also been considered in the signalized intersection analysis. Signal timing for study area intersections have been requested and utilized. Where signal timing was unavailable, the local accepted standards were utilized in lieu of actual signal timing.

The peak hour traffic volumes have been adjusted using a peak hour factor (PHF) to reflect peak 15 minute volumes. Flow rates are typically expressed in vehicles per hour. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume (e.g. PHF = [Hourly Volume] / [4 x Peak 15-minute Flow Rate]). The use of a 15-minute PHF produces a more detailed analysis as compared to analyzing vehicles per hour. Existing PHFs have been used for all analysis scenarios. Per Chapter 4 of the HCM 6th Edition (HCM6), PHF values over 0.95 often are indicative of high traffic volumes with capacity constraints on peak hour flows while lower PHF values are indicative of greater variability of flow during the peak hour.

4.2.2 UNSIGNALIZED INTERSECTIONS

The City of Corona requires the operations of unsignalized intersections be evaluated using the methodology described in Chapter 19, Chapter 20, and Chapter 32 of the HCM 6th Edition. The LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 4-2).

TABLE 4-2: UNSIGNALIZED INTERSECTION DESCRIPTION OF LOS

Description	Average Control Delay Per Vehicle (Seconds)	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Little or no delays.	0 to 10.00	A	F
Short traffic delays.	10.01 to 15.00	B	F
Average traffic delays.	15.01 to 25.00	C	F
Long traffic delays.	25.01 to 35.00	D	F
Very long traffic delays.	35.01 to 50.00	E	F
Extreme traffic delays with intersection capacity exceeded.	> 50.00	F	F

Source: HCM 6th Edition

At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane.

To evaluate roundabout intersections, the HCM6 methodology has been utilized. The LOS for roundabouts is based on average vehicle delay and utilizes the same LOS threshold used for unsignalized intersections and previously presented on Table 4-2.

4.3 QUEUING ANALYSIS

For the purpose of this analysis and per the City of Corona's request, the 95th percentile queuing of vehicles has been assessed along Eagle Glen – Cajalco Road from Bedford Canyon Road to I-5 / Cajalco Interchange, Bedford Canyon Road / Foothill Parkway – El Cerrito Road, and Project Access points on Bedford Canyon Road to determine potential queuing deficiencies.

The traffic progression analysis tool and HCM intersection analysis program, Synchro, has been used to assess the potential deficiencies/needs of the intersections with traffic added from the proposed Project. Storage (turn-pocket) length recommendations have been based upon the 95th percentile queue resulting from the Synchro progression analysis. The queue length reported is for the lane with the highest queue in the lane group.

A vehicle is considered queued whenever it is traveling at less than 10 feet/second. A vehicle will only become queued when it is either at the stop bar or behind another queued vehicle. Although only the 95th percentile queue has been reported in the tables, the 50th percentile queue can be found in the appendix alongside the 95th percentile queue for each ramp location. The 50th percentile maximum queue is the maximum back of queue on a typical cycle during the peak hour, while the 95th percentile queue is the maximum back of queue with 95th percentile traffic volumes during the peak hour. In other words, if traffic were observed for 100 cycles, the 95th percentile queue would be the queue experienced with the 95th busiest cycle (or 5% of the time). The 50th percentile or average queue represents the typical queue length for peak hour traffic conditions, while the 95th percentile queue is derived from the average queue plus

1.65 standard deviations. The 95th percentile queue is not necessarily ever observed, it is simply based on statistical calculations.

4.4 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by Caltrans and other public agencies to quantitatively justify or ascertain the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TIA uses the signal warrant criteria presented in the latest edition of the Federal Highway Administration's (FHWA) *Manual on Uniform Traffic Control Devices (MUTCD)*, as amended by *the MUTCD 2012 California Supplement*, for all study area intersections.

The signal warrant criteria for Existing conditions are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. Both the FHWA's *MUTCD* and the *MUTCD 2012 California Supplement* indicate that the installation of a traffic signal should be considered if one or more of the signal warrants are met. Specifically, this TIA utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for existing traffic conditions. Warrant 3 criteria are basically identical for both the FHWA's *MUTCD* and the *MUTCD 2012 California Supplement*. Warrant 3 is appropriate to use for this TIA because it provides specialized warrant criteria for intersections with rural characteristics (e.g. located in communities with populations of less than 10,000 persons or with adjacent major streets operating above 40 miles per hour). For the purposes of this study, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection. It should be noted that Rural warrants have been utilized along Masters Drive and Bedford Canyon Road.

Future intersections that do not currently exist have been assessed regarding the potential need for new traffic signals based on future average daily traffic (ADT) volumes, using the Caltrans planning level ADT-based signal warrant analysis worksheets.

Traffic signal warrant analyses were performed for the unsignalized study area intersections listed in Table 4-3.

TABLE 4-3: TRAFFIC SIGNAL WARRANT ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction
1	Masters Drive / California Avenue	Corona
2	Masters Drive / Bennett Avenue	Corona
5	Bedford Canyon Road / Georgetown Drive	Corona
18	Masters Drive / Christopher Lane	Corona
19	Via Castilla Street / Masters Drive	Corona
20	Morales Way / Masters Drive	Corona
22	Bedford Canyon Road / Commercial South Driveway – *Future Intersection*	Corona
23	Bedford Canyon Road / Commercial Main Driveway – *Future Intersection*	Corona

The Existing (2017 and 2018) conditions traffic signal warrant analysis is presented previously in Section 2.5. The traffic signal warrant analysis for future conditions are presented in Section 5.0 *Interim Year (2021) Traffic Analysis*, and Section 6.0 *Horizon Year 2035 Traffic Analysis* of this report.

It is important to note that a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should also be noted that signal warrants do not necessarily correlate with LOS. An intersection may satisfy a signal warrant condition and operate at or above acceptable LOS or operate below acceptable LOS and not meet a signal warrant.

4.5 LOS CRITERIA

In accordance with the City of Corona General Plan, the following intersection LOS thresholds from the General Plan are to be implemented:

- LOS C or better shall be maintained for local intersections in residential/industrial areas.
- LOS D or better shall be maintained on collector and arterial intersections.
- Consistent with the previously approved Arantine Hills Traffic Impact Analysis (2015) and Arantine Hills Specific Plan Amendment No.2 Traffic Assessment (November 2018), LOS "E" is anticipated to be permitted for the ramp intersections at the I-15 / Cajalco Road interchange.

The City of Corona LOS criteria for the study area intersections are listed below:

ID	Intersection	LOS Criteria
1	Masters Drive / California Avenue	*C*
2	Masters Drive / Bennett Avenue	*C*
3	Masters Drive / Eagle Glen Parkway	*D*
4	Bedford Canyon Road / El Cerrito Road	*D*
5	Bedford Canyon Road / Georgetown Drive	*C*
6	Bedford Canyon Road / Eagle Glen Parkway	*D*
7	I-15 SB Ramps / El Cerrito Road	*D*
8	I-15 SB Ramps / Cajalco Road	*E*
9	I-15 NB Ramps / El Cerrito Road	*D*
10	I-15 NB Ramps / Cajalco Road	*E*
11	Grand Oaks / Cajalco Road	*D*
12	Temescal Canyon Road / Cajalco Road	*D*
13	Clementine Way / Eagle Glen Parkway	*D*
14	Clementine Way / Hudson House Drive	*C*
15	Bedford Canyon Road / Hudson House Drive	*C*
18	Masters Drive / Christopher Lane	*C*
19	Via Castilla Street / Masters Drive	*C*

ID	Intersection (Continued)	LOS Criteria
20	Morales Way / Masters Drive	*C*
22	Bedford Canyon Road / Commercial RIRO Driveway	*C*
23	Bedford Canyon Road / Commercial Main Driveway	*C*
24	Bedford Canyon Road / Commercial South Driveway	*C*

The Arantine Hills Project Traffic Study provides the mitigation measures needed to satisfy the minimum level of service thresholds defined by the City of Corona. This is consistent with the Caltrans Guide for the preparation of Traffic Impact Studies that states "Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State highway facilities". However, it should be noted that Caltrans acknowledges that maintaining these levels of service thresholds may not always be feasible and recommends the lead agency consult with Caltrans to determine the appropriate target level of service. If an existing facility is operating at less than the appropriate target LOS, the existing LOS should be maintained.

5.0 INTERIM YEAR (2021) TRAFFIC ANALYSIS

This section discusses the methods used to develop Interim Year (2021) without and with Project traffic conditions and the resulting intersection operations.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed for Interim Year (2021) Conditions are as follows:

- Bedford Marketplace driveways and those facilities assumed to be constructed as part of the Bedford Marketplace to provide site access are assumed to be in place for With Project conditions only (e.g., intersection and roadway improvements at the Project's frontage and driveways).

Planned improvements (currently under construction) at or near the Cajalco Road/I-15 interchange area include the following:

- Widen Cajalco Road from a 2-lane divided roadway to a 4-lane divided roadway, between Bedford Canyon Road and I-15 SB Ramps.
- Widen Cajalco Road from a 2-lane divided roadway to a 6-lane divided roadway, between the I-15 SB and I-15 NB ramps.
- Widen Cajalco Road from a 5-lane divided roadway to a 6-lane divided roadway, between the I-15 NB ramps Temescal Canyon Road.

The unsignalized intersection of Masters Drive / Eagle Glen Parkway (#3) and future intersection of Clementine Way / Eagle Glen Parkway (#13) under existing conditions are evaluated with traffic signal control for Interim Year (2021) conditions. These traffic signal improvements were recently installed after existing (2017/2018) counts were taken.

5.2 INTERIM YEAR (2021) TRAFFIC VOLUME FORECASTS

To account for ambient growth on area roadways, future 2021 traffic volumes have been estimated based on an annual growth of 2% per year (total of 8% growth for 4 years). In addition, the approved Arantine Hills Project traffic is also included as background traffic for 2021 conditions.

The Interim Year (2021) Without Project conditions peak hour intersection turning movement volumes were shown previously on Exhibits 3-4 and 3-5. The 2021 With Project conditions peak hour intersection turning movement volumes were shown previously on Exhibits 3-6 and 3-7.

5.3 INTERSECTION OPERATIONS ANALYSIS AND RECOMMENDED IMPROVEMENTS

Table 5-1 provides an overall summary of intersection operations in the study area with Interim Year (2021) without and with Project conditions.

TABLE 5-1: INTERSECTION ANALYSIS SUMMARY FOR INTERIM YEAR (2021) CONDITIONS

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												2021 Without Project				2021 With Project				LOS Criteria
			Northbound			Southbound			Eastbound			Westbound			Delay[2] (Secs)		Level of Service[2]		Delay[2] (Secs)		Level of Service[2]		
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM	AM	PM	
1	Masters Dr. / California Av.																						
	- Without Improvements	AWS	1	1	0	1	1	0	1	1	0	1	1	1	**126.7**	30.6	**F**	**D**	**130.2**	31.9	**F**	**D**	*C*
	- With Improvements[5]	**TS**	1	1	0	1	1	0	1	1	0	1	1	1	21.8	16.7	C	B	22.0	16.8	C	B	*C*
2	Masters Dr. / Bennett Av.	AWS	1	1	0	1	1	0	0	1!	0	0	1!	0	11.0	22.3	B	C	11.4	24.9	B	C	*C*
3	Masters Dr. / Eagle Glen Pkwy.	*TS*	0	0	0	1	0	1	1	2	0	0	2	0	20.5	36.4	C	D	29.5	37.0	C	D	*D*
4	Bedford Cyn. Rd. / El Cerrito Rd.	TS	1	0	1	0	0	*1*	0	2	*1*	1	2	*1>>*	39.0	17.3	D	B	42.5	18.1	D	B	*D*
5	Bedford Cyn. Rd. / Georgetown Dr.	AWS	1	1	0	0	1	1	0	1	1>>	0	1!	0	10.7	13.9	B	B	11.1	15.0	B	B	*C*
6	Bedford Cyn. Rd. / Eagle Glen Pkwy.																						
	- With Arantine Hills South Leg Access, During Interchange Construction	TS	**1**	**1**	**1>**	1	**1**	1>	1	1	0	**2**	*1*	1>	**84.0**	**137.2**	**F**	**F**	**87.2**	**143.3**	**F**	**F**	*D*
	- With Arantine Hills Improvements[5]	TS	**1**	**1**	**1>**	**1.5**	**0.5**	1>	1	*2*	0	**2**	2	1>	38.0	39.5	D	D	45.1	48.3	D	D	*D*
7	I-15 SB Ramps / El Cerrito Rd.	TS	0	0	0	0.5	0.5	1	0	2	0	1	2	0	16.4	27.5	B	C	16.4	27.5	B	C	*D*
8	I-15 SB Ramps / Cajalco Rd.																						
	- Without Improvements, Lane Config. During Interchange Construction	TS	0	0	0	1	0	1	1	1	0	0	*1*	0	**73.6**	**225.9**	E	**F**	**79.9**	**250.3**	E	**F**	*E*
	- With Interchange Improvements[4,5]	TS	0	0	0	*2*	0	*2*	*2*	**3**	0	0	*2*	1	20.2	38.6	C	D	21.0	44.8	C	D	*E*
9	I-15 NB Ramps / El Cerrito Rd.	TS	0	1!	0	0	0	0	2	1	0	0	2	0	37.9	32.6	D	C	38.1	32.6	D	C	*D*
10	I-15 NB Ramps / Cajalco Rd.																						
	- Without Improvements, Lane Config. During Interchange Construction	TS	1	0	1	0	0	0	*1*	*1*	0	0	*1*	0	**268.7**	**214.4**	**F**	**F**	**276.5**	**215.3**	**F**	**F**	*E*
	- With Interchange Improvements[5]	TS	*2*	0	*2*	0	0	0	0	*3*	*1>*	0	*4*	0	18.3	16.3	B	B	19.2	16.9	B	B	*E*
11	Grand Oaks / Cajalco Rd.																						
	- Without Improvements, Lane Config. During Interchange Construction	TS	0	1!	0	0.5	0.5	2>	*0.5*	*1.5*	0	*0.5*	*1.5*	0	**301.6**	**97.3**	**F**	**F**	**306.1**	**101.8**	**F**	**F**	*D*
	- With Interchange Improvements[5]	TS	0	1!	0	0.5	0.5	2>	2	*3*	0	1	3	1	39.4	32.0	D	C	38.2	32.3	D	C	*D*
12	Temescal Cyn. Rd. / Cajalco Rd.	TS	2	2	d	1	2	0	1	1	1	1	3	0	38.4	49.1	D	D	38.9	49.5	D	D	*D*
13	Clementine Wy. / Eagle Glen Pkwy.	*TS*	*1*	0	*1*	0	0	0	0	2	0	*1*	1	0	30.2	28.3	C	C	30.2	28.3	C	C	*D*
15	Bedford Cyn. Rd. / Hudson House Dr.[5]	*RDB*	0	**1**	0	0	**1**	0	0	**1**	0	0	0	0	4.9	5.9	A	A	5.3	6.2	A	A	*C*

TABLE 5-1: INTERSECTION ANALYSIS SUMMARY FOR INTERIM YEAR (2021) CONDITIONS

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												2021 Without Project				2021 With Project				LOS Criteria
			Northbound			Southbound			Eastbound			Westbound			Delay[2] (Secs)		Level of Service[2]		Delay[2] (Secs)		Level of Service[2]		
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM	AM	PM	
18	Masters Dr. / Christopher Ln.																						
	- Without Improvements	AWS	1	1	0	1	1	0	0	1!	0	0	1!	0	**58.9**	**70.8**	**F**	**F**	**62.6**	**74.8**	**F**	**F**	*C*
	- With Roundabout[5]	**RDB**	0	1!	0	0	1!	0	0	1!	0	0	1!	0	10.3	8.4	B	A	10.5	8.5	B	A	*C*
	- With Traffic Signal[5]	**TS**	1	1	0	1	1	0	0	1!	0	0	1!	0	5.9	9.8	A	A	6.0	10.0	A	A	*C*
19	Via Castilla St. / Masters Dr.																						
	- Without Improvements	AWS	0	0	0	0	1!	0	1	1	0	0	1	0	**32.2**	**88.1**	**D**	**F**	**35.2**	**94.4**	**E**	**F**	*C*
	- With Roundabout[5]	**RDB**	0	0	0	0	1!	0	0	1	0	0	1	0	7.4	9.5	A	A	7.6	9.8	A	A	*C*
	- With CSS control[5]	CSS	0	0	0	0	1!	0	1	1	0	0	1	0	17.6	22.1	C	C	18.3	23.1	C	C	*C*
20	Morales Wy. / Masters Dr.																						
	- Without Improvements	AWS	0	1!	0	0	1!	0	1	1	0	1	1	0	17.5	**77.8**	C	**F**	18.7	**85.0**	C	**F**	*C*
	- With Roundabout[5]	**RDB**	0	1!	0	0	1!	0	0	1!	0	0	1!	0	6.5	9.4	A	A	6.7	9.7	A	A	*C*
	- With Traffic Signal[5]	**TS**	0	1!	0	0	1!	0	1	1	0	1	1	0	13.7	25.9	B	C	13.9	27.7	B	C	*C*
22	Bedford Cyn. Rd. / Commercial S. Dwy[6]	**CSS**	0	**2**	0	**1**	**2**	0	0	0	0	0	**1!**	0	10.8	14.1	B	B	11.1	16.2	B	C	*C*
23	Bedford Cyn. Rd. / Commercial Main Dwy.[6]	**TS**	0	**2**	0	**1**	**2**	0	0	0	0	**1**	0	**1**	10.4	10.7	B	B	23.1	13.9	C	B	*C*
24	Bedford Cyn. Rd. / Commercial RIRO Dwy.	**CSS**	0	**2**	0	0	**2**	0	0	0	0	0	0	**1**	9.9	9.9	A	A	11.1	10.8	B	B	*C*

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; d = Defacto Right Turn Lane; 1! = Shared Left-Through-Right turn lane; > = Right Turn Overlap; >> = Free-Right;

1 = Recently Completed Improvement; ***1*** = Lane reduction/configuration during interchange construction; **1** = Improvement; ***1*** = Planned Interchange Improvement

[2] Per the Highway Capacity Manual 6th Edition (HCM6), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control.

For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

Delay and level of service is calculated using Synchro 10.1 analysis software.

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[3] TS = Traffic Signal; CSS = Cross-street Stop; AWS = All-Way Stop; RDB = Roundabout

[4] Per City of Corona staff, a 3rd EBT lane is recommended.

[5] Source: Arantine Hills Specific Plan Amendment No.2 Traffic Assessment (November 2018). Prepared by Urban Crossroads, Inc.

[6] Source: Arantine Hills Modified Project Traffic Study (September 2015). Prepared by Urban Crossroads, Inc.

R:\UXRjobs_12100-12500\12554\Excel\[12554 - Report.xlsx]5-1

The Interim Year (2021) Without Project conditions intersection operations analysis worksheets are provided in Appendix "5.1". The 2021 With Project conditions intersection operations analysis worksheets are provided in Appendix "5.2".

For Interim Year (2021) Without Project and With Project scenarios, LOS deficiencies occur at the following intersections:

ID	Intersection Location	Jurisdiction
1	Masters Drive / California Avenue	Corona
6	Bedford Canyon Road / Eagle Glen Parkway	Corona
8	I-15 SB Ramps / Cajalco Road	Caltrans
10	I-15 NB Ramps / Cajalco Road	Caltrans
11	Grand Oaks / Cajalco Road	Corona
18	Masters Drive / Christopher Lane	Corona
19	Via Castilla Street / Masters Drive	Corona
20	Morales Way / Masters Drive	Corona

With the recommended intersection improvements listed below, the deficient intersections identified under Interim Year (2021) Without Project conditions are projected to operate at acceptable level of service during both AM and PM peak hours. Planned improvements (see Caltrans improvement plans in Appendix 1.2) at or near the Cajalco Road / I-15 Interchange area are also included below.

Masters Drive / California Drive (#1)

- Install a traffic signal.

Bedford Canyon Road / Eagle Glen Parkway - Cajalco Road (#6) *– Under Construction*

- Traffic Signal Modification.
- Adjust the east leg striping to provide a 2nd receiving lane.
- NB Approach: Construct one left turn lane, one through lane, and one-right turn lane.
- SB Approach: Modify striping to provide a new shared left/through lane.
- EB Approach: Modify striping to provide a new shared through/right turn lane.
- WB Approach: Construct 2 left turn lanes.

I-15 SB Ramps / Cajalco Road (#8) *– Under Construction*

- SB Approach: Construct a 2nd left turn lane and 2nd right turn lane.
- EB Approach: Construct a 2nd left turn lane, 2nd through lane, and 3rd through lane.
- WB Approach: Construct a 2nd through lane

I-15 NB Ramps / Cajalco Road (#10) *– Under Construction*

- NB Approach: Construct a 2nd left turn lane and 2nd right turn lane.
- EB Approach: Construct a 2nd and 3rd through lanes and one right turn lane with overlap phasing.
- WB Approach: Construct a 2nd and 3rd through lanes.

Grand Oaks / Cajalco Road (#11) *– Under Construction*

- EB Approach: Construct a 3rd through lane.

Bedford Canyon Road / Hudson House Drive (#15)

- Install roundabout.
- NB Approach: Provide a shared left/through lane.
- SB Approach: Provide a shared through/right turn lane.
- EB Approach: Provide a shared left/right turn lane.

Masters Drive / Christopher Lane (#18)

- Provide traffic signal, or small roundabout (within existing right-of-way).

Via Castilla Street / Masters Drive (#19)

- Convert to cross-street stop control on Via Castilla Street (in conjunction with Masters Drive / Christopher Lane and Morales Way / Masters Drive traffic signals), or construct a roundabout (within existing right-of-way).

Morales Way / Masters Drive (#20)

- Install a traffic signal, or construct a roundabout (within existing right-of-way).

Bedford Canyon Road / Commercial South Driveway (#22)

- Install a stop sign control for the westbound approach.
- NB Approach: Provide one through lane and one shared through/right lane.
- SB Approach: Provide a left turn (minimum 150 ft.) lane and two through lanes.
- WB Approach: Provide a shared left/right turn lane.

Bedford Canyon Road / Commercial Main Driveway (#23)

- Install a traffic signal.
- NB Approach: Provide one through lane and one shared through/right lane.
- SB Approach: Provide a left turn (minimum 200 ft.) lane and two through lanes.
- WB Approach: Provide one left turn lane and one right turn lane.

Bedford Canyon Road / Commercial RIRO Driveway (#24)

- Install a stop sign control for the westbound approach.
- Restrict intersection to right-in/right-out access only
- NB Approach: Provide one through lane and one shared through/right lane.
- SB Approach: Provide two through lanes.
- WB Approach: Provide one right turn lane.

For Interim Year (2021) With Project Conditions, the Project does not generate impacts that require new improvements beyond the improvements identified under Interim Year (2021) Without Project conditions.

5.4 QUEUING ANALYSIS

A queuing analysis was performed for With Project Conditions to assess the adequacy of turn bay lengths to accommodate vehicle queues at the Bedford Marketplace entries and nearby interchange area (including Eagle Glen Parkway – Cajalco Road between Bedford Canyon Road and I-15 Ramps, Bedford Canyon Road / Foothill Parkway - El Cerrito Road). The simulation and optimization traffic modeling tools Synchro and SimTraffic were utilized to perform this evaluation of traffic flows and vehicle queuing. Synchro is a macroscopic analysis and optimization program, and SimTraffic performs microsimulations and animation of vehicle traffic. The SimTraffic analysis includes the effects of nearby intersections on arrival time at an intersection, during the AM and PM peak periods.

In SimTraffic, each vehicle in the traffic system is individually tracked and operational measures of effectiveness are collected on every vehicle during each 10th of a second of simulation. Driver behavior characteristics (ranging from passive to aggressive) are assigned to each vehicle by the model, affecting the vehicle's free-flow speed, queue discharge headways, and other behavioral attributes. The variation in each vehicle's behavior is simulated in a manner reflecting real-world operations.

The queue length reported for each movement in SimTraffic is responsive to the turn pocket length, just like in the real world. SimTraffic simply observes the actual queue activity as it unfolds during the peak hour. Any spillover from the left turn pocket would be reported in the adjacent lane queue length. The random simulations generated by SimTraffic have been utilized to determine the 95th percentile queue lengths observed for each turn lane.

The estimated turn lane storage length requirements for the Project entries and nearby interchange area for Interim Year (2021) with Project traffic conditions are summarized in Table 5-2. These lengths are based on the volumes presented in Chapter 3, and queue length worksheets are included in Appendix 5.2.

TABLE 5-2: INTERIM YEAR (2021) WITH PROJECT CONDITIONS LANE STORAGE LENGTHS

ID	Intersection	Turning Movement Lane	# of Lanes	2035 With Project				Storage Length[2] (ft.)	95th Percentile Queue Length[1]	
				AM	PM	Peak Hour	Volume		AM	PM
4	Bedford Cyn. Rd. / El Cerrito Rd.	NBR	1	328	127	AM	328	125	190 [3]	110
		WBL	1	120	200	PM	200	135	165 [3]	176 [3]
6	Bedford Cyn. Rd. / Eagle Glen Pkwy.	NBL	1	58	97	PM	97	**150**	75	128
		NBR	1	568	468	AM	568	>150	291	240
		SBL	1.5	128	437	PM	437	>240	113	205
		EBL	1	121	94	AM	121	200	155	270 [3]
		WBL	2	297	731	PM	731	**200**	185	318 [3]
		WBR	1	439	73	PM	420	**200**	46	37
8	I-15 SB Ramps / Cajalco Rd.	EBL	2	322	581	PM	581	**290**	182	238
		WBR	1	101	361	PM	542	**>250**	44	105
10	I-15 NB Ramps / Cajalco Rd.	EBR	1	784	537	AM	784	**340**	61	36
22	Bedford Cyn. Rd. / Commercial S. Dwy.	SBL	1	76	184	PM	184	**150**	55	91
23	Bedford Cyn. Rd. / Commercial Main Dwy.	SBL	1	174	281	PM	281	**200**	172	175

[1] Queue length calculated using SimTraffic.

[2] Existing/Proposed length of storage. Existing = 100; Proposed =**100**

[3] Review of SimTraffic simulation results indicate that the turn lane queue is anticipated to clear in a timely manner and that the provided pocket length is adequate.

R:\UXRjobs_12100-12500\12554\Excel\[12554 - Report.xlsx]2-1

5.5 TRAFFIC SIGNAL WARRANT ANALYSIS

For Interim Year (2021) Without Project Conditions, the intersection of Bedford Canyon Road / Commercial Main Driveway (#23) is anticipated to meet traffic signal warrants in addition to the intersection previously identified under Existing conditions.

For Interim Year (2021) With Project traffic conditions, there are no new unsignalized intersections anticipated to meet traffic signal warrants, in addition to the intersections identified under Interim Year (2021) without Project conditions.

The 2021 Without and With Project traffic signal warrant analysis worksheets are provided in Appendix "5.3". For 2021 conditions without the Project, the intersection of Bedford Canyon Road / Commercial Main Driveway (#23) is anticipated to meet traffic signal warrants (in addition to the intersection previously identified under Existing conditions).

6.0 HORIZON YEAR 2035 TRAFFIC ANALYSIS

6.1 HORIZON YEAR 2035 TRAFFIC VOLUME FORECASTS

The Horizon Year 2035 volumes from Arantine Hills Specific Plan Amendment No. 2 Traffic Assessment (November 2018) have been utilized in this report to represent "Without Project" conditions.

The Horizon Year 2035 Without Project Conditions peak hour intersection turning movement volumes were shown previously on Exhibits 3-8 and 3-9.

The Horizon Year 2035 With Project Conditions peak hour intersection turning movement volumes were shown previously on Exhibits 3-10 and 3-11.

6.2 INTERSECTION OPERATIONS ANALYSIS AND RECOMMENDED IMPROVEMENTS

Table 6-1 provides an overall summary of intersection operations in the study area with 2035 Without Project and With Project conditions.

The Horizon Year 2035 Without Project Conditions intersection operations analysis worksheets are provided in Appendix "6.1". The Horizon Year 2035 With Project Conditions intersection operations analysis worksheets are provided in Appendix "6.2".

For Horizon Year 2035 Without Project Conditions, the following intersections are anticipated to operate at unacceptable level of service, with planned improvements at or near the Cajalco Road / I-15 interchange area:

ID	Intersection Location	Jurisdiction
1	Masters Drive / California Avenue	Corona
2	Masters Drive / Bennett Avenue	Corona
5	Bedford Canyon Road / Eagle Glen Parkway	Corona
7	I-15 SB Ramps / El Cerrito Road	Caltrans
12	Temescal Canyon Road / Cajalco Road	Corona
18	Masters Drive / Christopher Lane	Corona
19	Via Castilla Street / Masters Drive	Corona
20	Morales Way / Masters Drive	Corona

For Horizon Year 2035 With Project Conditions, there are no new intersections anticipated to operate at deficient level of service, beyond the intersections previously identified under Horizon Year 2035 Without Project Conditions. Project driveways and those facilities to be constructed by Bedford Marketplace to provide site access are assumed to be in place for With Project conditions (e.g., intersection and roadway improvements at the Project's frontage and driveways).

TABLE 6-1: INTERSECTION ANALYSIS SUMMARY FOR HORIZON YEAR 2035 CONDITIONS

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												HY 2035 Without Project				HY 2035 With Project				LOS Criteria
			Northbound			Southbound			Eastbound			Westbound			Delay[2] (Secs)		Level of Service[2]		Delay[2] (Secs)		Level of Service[2]		
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM	AM	PM	
1	Masters Dr. / California Av.																						
	- With Improvements[5]	**TS**	1	1	0	1	1	0	1	1	0	1	1	1	34.2	18.2	C	B	34.7	18.4	C	B	*C*
2	Masters Dr. / Bennett Av.																						
	- With Improvements[5]	**TS**	1	1	0	1	1	0	0	1!	0	0	1!	0	7.9	8.9	A	A	7.9	9.0	A	A	*C*
3	Masters Dr. / Eagle Glen Pkwy.	*TS*	0	0	0	1	0	1	1	2	0	0	2	0	17.5	32.3	B	C	18.3	32.8	B	C	*D*
4	Bedford Cyn. Rd. / El Cerrito Rd.	TS	1	0	1	0	0	*1*	0	2	*1*	1	2	*1>>*	29.1	24.4	C	C	30.4	25.6	C	C	*D*
5	Bedford Cyn. Rd. / Georgetown Dr.																						
	- With Improvements[6]	**TS**	1	1	0	0	1	1	0	1	1>>	0	1!	0	5.1	3.9	A	A	5.1	3.9	A	A	*C*
6	Bedford Cyn. Rd. / Eagle Glen Pkwy.																						
	- With Arantine Hills Improvements[5]	TS	**1**	**1**	**1>**	**1.5**	**0.5**	1>	1	***2***	0	**2**	2	1>	39.9	46.6	D	D	48.8	54.9	D	D	*D*
7	I-15 SB Ramps / El Cerrito Rd.																						
	- With Improvements[6]	TS	0	0	0	0.5	0.5	1	0	2	**1**	1	2	0	37.8	39.8	D	D	37.8	39.8	D	D	*D*
8	I-15 SB Ramps / Cajalco Rd.																						
	- With Interchange Improvements[4,5]	TS	0	0	0	***2***	0	***2***	***2***	**3**	0	0	***2***	1	21.1	39.9	C	D	21.9	47.1	C	D	*E*
9	I-15 NB Ramps / El Cerrito Rd.	TS	0	1!	0	0	0	0	2	1	0	0	2	0	53.1	45.7	D	D	53.4	45.7	D	D	*D*
10	I-15 NB Ramps / Cajalco Rd.																						
	- With Interchange Improvements[5]	TS	***2***	0	***2***	0	0	0	0	***3***	***1>***	0	***4***	0	19.5	17.9	B	B	20.5	18.5	C	B	*E*
11	Grand Oaks / Cajalco Rd.																						
	- With Interchange Improvements[5]	TS	0	1!	0	0.5	0.5	2>	2	***3***	0	1	3	1	38.3	33.6	D	C	38.9	33.8	D	C	*D*
12	Temescal Cyn. Rd. / Cajalco Rd.																						
	- With Improvements[5]	TS	2	2	d	**2**	2	0	1	**2**	1	1	3	**1**	51.6	50.7	D	D	52.4	50.9	D	D	*D*
13	Clementine Wy. / Eagle Glen Pkwy.	*TS*	*1*	0	*1*	0	0	0	0	2	0	*1*	1	0	30.1	28.6	C	C	30.2	28.6	C	C	*D*
15	Bedford Cyn. Rd. / Hudson House Dr.[5]	*RDB*	0	**1**	0	0	**1**	0	0	**1**	0	0	0	0	4.9	5.9	A	A	5.3	6.2	A	A	*C*
18	Masters Dr. / Christopher Ln.																						
	- With Roundabout[5]	**RDB**	0	1!	0	0	1!	0	0	1!	0	0	1!	0	8.9	9.3	A	A	9.0	9.5	A	A	*C*
	- With Traffic Signal[5]	**TS**	1	1	0	1	1	0	0	1!	0	0	1!	0	5.1	5.3	A	A	6.2	5.4	A	A	*C*
19	Via Castilla St. / Masters Dr.																						
	- With Roundabout[5]	**RDB**	0	0	0	0	1!	0	0	1	0	0	1	0	6.1	7.8	A	A	6.2	7.9	A	A	*C*
	- With CSS control[5]	CSS	0	0	0	0	1!	0	1	1	0	0	1	0	14.7	19.6	B	C	15.1	20.5	C	C	*C*

TABLE 6-1: INTERSECTION ANALYSIS SUMMARY FOR HORIZON YEAR 2035 CONDITIONS

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												HY 2035 Without Project				HY 2035 With Project				LOS Criteria
			Northbound			Southbound			Eastbound			Westbound			Delay[2] (Secs)		Level of Service[2]		Delay[2] (Secs)		Level of Service[2]		
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM	AM	PM	
20	Morales Wy. / Masters Dr.																						
	- With Roundabout[5]	**RDB**	0	1!	0	0	1!	0	0	1!	0	0	1!	0	6.5	8.3	A	A	6.7	9.7	A	A	*C*
	- With Traffic Signal[5]	**TS**	0	1!	0	0	1!	0	1	1	0	1	1	0	13.7	19.1	B	B	14.3	19.9	B	B	*C*
22	Bedford Cyn. Rd. / Commercial S. Dwy[6]	**CSS**	0	**2**	0	**1**	**2**	0	0	0	0	0	**1!**	0	10.8	14.1	B	B	11.1	16.2	B	C	*C*
23	Bedford Cyn. Rd. / Commercial Main Dwy.[6]	**TS**	0	**2**	0	**1**	**2**	0	0	0	0	**1**	0	**1**	10.4	10.7	B	B	23.1	13.9	C	B	*C*
24	Bedford Cyn. Rd. / Commercial RIRO Dwy.	**CSS**	0	**2**	0	0	**2**	0	0	0	0	0	0	**1**	9.9	9.9	A	A	11.1	10.8	B	B	*C*

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; d = Defacto Right Turn Lane; 1! = Shared Left-Through-Right turn lane; > = Right Turn Overlap; >> = Free-Right;

1 = Recently Completed Improvement; **1** = Improvement; ***1*** = Planned Interchange Improvement

[2] Per the Highway Capacity Manual 6th Edition (HCM6), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control.

For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

Delay and level of service is calculated using Synchro 10.1 analysis software.

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[3] TS = Traffic Signal; CSS = Cross-street Stop; AWS = All-Way Stop; RDB = Roundabout

[4] Per City of Corona staff, a 3rd EBT lane is recommended.

[5] Source: Arantine Hills Specific Plan Amendment No.2 Traffic Assessment (November 2018). Prepared by Urban Crossroads, Inc.

[6] Source: Arantine Hills Modified Project Traffic Study (September 2015). Prepared by Urban Crossroads, Inc.

R:\UXRjobs_12100-12500\12554\Excel\[12554 - Report.xlsx]6-1

With the recommended intersection improvements listed below (in addition to the previously identified improvements under Interim Year (2021) Without Project conditions), the deficient intersections identified under Horizon Year 2035 Without Project Conditions are projected to operate at acceptable level of service during both AM and PM peak hours.

I-15 SB Ramps / El Cerrito Road (#7)

- EB Approach: Construct a separate right turn lane

Temescal Canyon Road / Cajalco Road (#12)

- Widen Cajalco Road from four-lane divided to six-lane divided roadway, east of Temescal Canyon Road.
- SB Approach: Modify striping to provide a 2nd left turn lane, in addition to the existing two through lanes.
- EB Approach: Modify striping to provide a 2nd through lane, in addition to the existing left turn lane and right turn lane.
- WB Approach: Construct one right turn lane.

Traffic signal improvements are also recommended at the following intersections without the Project based on the traffic signal warrant results discussed in section 6.4:

Masters Drive / Bennett Avenue (#2)

- Install a traffic signal.

Bedford Canyon Road / Georgetown Drive (#5)

- Install a traffic signal.

For Horizon Year 2035 With Project Conditions, the Project does not generate impacts that require new improvements beyond the improvements identified under Horizon Year 2035 Without Project conditions.

6.3 QUEUING ANALYSIS

A queuing analysis was performed for With Project Conditions to assess the adequacy of turn bay lengths to accommodate vehicle queues at the Bedford Marketplace entries and nearby interchange area (including Eagle Glen Parkway – Cajalco Road between Bedford Canyon Road and I-15 Ramps, Bedford Canyon Road / Foothill Parkway - El Cerrito Road). The simulation and optimization traffic modeling tools Synchro and SimTraffic were utilized to perform this evaluation of traffic flows and vehicle queuing. Synchro is a macroscopic analysis and optimization program, and SimTraffic performs microsimulations and animation of vehicle traffic. The SimTraffic analysis includes the effects of nearby intersections on arrival time at an intersection, during the AM and PM peak periods.

In SimTraffic, each vehicle in the traffic system is individually tracked and operational measures of effectiveness are collected on every vehicle during each 10th of a second of simulation. Driver behavior characteristics (ranging from passive to aggressive) are assigned to each vehicle by the model, affecting the vehicle's free-flow speed, queue discharge headways, and other behavioral attributes. The variation in each vehicle's behavior is simulated in a manner reflecting real-world operations.

The queue length reported for each movement in SimTraffic is responsive to the turn pocket length, just like in the real world. SimTraffic simply observes the actual queue activity as it unfolds during the peak hour. Any spillover from the left turn pocket would be reported in the adjacent lane queue length. The random simulations generated by SimTraffic have been utilized to determine the 95th percentile queue lengths observed for each turn lane.

The estimated turn lane storage length requirements for the Project entries and nearby interchange area for Horizon Year 2035 with Project traffic conditions are summarized in Table 6-2. These lengths are based on the volumes presented in Chapter 3, and queue length worksheets are included in Appendix 6.2.

6.4 TRAFFIC SIGNAL WARRANT ANALYSIS

For Horizon Year 2035 Without Project Conditions, the following intersections are anticipated to meet traffic signal warrants, in addition to the intersections identified previously under Interim Year (2021) conditions:

ID	Intersection Location	Jurisdiction
2	Masters Drive / Bennett Avenue	Corona
5	Bedford Canyon Road / Georgetown Drive	Corona

For Horizon Year 2035 With Project Conditions, there are no new intersections anticipated to meet traffic signal warrants, in addition to the intersections identified previously under 2035 Without Project conditions.

The 2035 Without Project and With Project traffic signal warrant analysis worksheets are provided in Appendix "6.3".

TABLE 6-2: HORIZON YEAR 2035 WITH PROJECT CONDITIONS LANE STORAGE LENGTHS

ID	Intersection	Turning Movement Lane	# of Lanes	2035 With Project				Storage Length[2] (ft.)	95th Percentile Queue Length[1]	
				AM	PM	Peak Hour	Volume		AM	PM
4	Bedford Cyn. Rd. / El Cerrito Rd.	NBR	1	319	194	AM	319	125	188 [3]	199 [3]
		WBL	1	305	236	AM	305	135	206 [3]	204 [3]
6	Bedford Cyn. Rd. / Eagle Glen Pkwy.	NBL	1	58	97	PM	97	**150**	62	112
		NBR	1	568	468	AM	568	>150	291	301
		SBL	1.5	154	420	PM	420	>240	94	208
		EBL	1	143	203	PM	203	200	219 [3]	223 [3]
		WBL	2	297	731	PM	731	**200**	185	329 [3]
		WBR	1	422	145	PM	420	**200**	52	27
8	I-15 SB Ramps / Cajalco Rd.	EBL	2	427	566	PM	566	**290**	202	221
		WBR	1	190	350	PM	542	**>250**	51	191
10	I-15 NB Ramps / Cajalco Rd.	EBR	1	923	631	AM	923	**340**	111	73
22	Bedford Cyn. Rd. / Commercial S. Dwy.	SBL	1	76	184	PM	184	**150**	60	57
23	Bedford Cyn. Rd. / Commercial Main Dwy.	SBL	1	174	281	PM	281	**200**	180	195

[1] Queue length calculated using SimTraffic.

[2] Existing/Proposed length of storage. Existing = 100; Proposed = **100**

[3] Review of SimTraffic simulation results indicate that the turn lane queue is anticipated to clear in a timely manner and that the provided pocket length is adequate.

R:\UXRjobs_12100-12500\12554\Excel\[12554 - Report.xlsx]2-1

7.0 VEHICLE MILES TRAVELED (VMT)

The California Environmental Quality Act (CEQA) procedures for determination of transportation impacts have recently changed to an evaluation of Vehicle Miles Traveled (VMT) rather than vehicle delay or level of service, due to Senate Bill 743 (SB 743). The City of Corona VMT Analysis Guidelines provide a structure for evaluating VMT on a project level basis. Vehicle delay and level of service are still used in Corona traffic studies, as presented in earlier sections of this traffic study.

7.1 CORONA VMT ANALYSIS GUIDELINES

The Corona VMT Analysis Guidelines (Fehr & Peers, January 2019) recommend a VMT assessment procedure that is consistent with the Western Regional Council of Governments (WRCOG). Projects are first screened to determine if a VMT analysis is required. If a Project has the potential to reduce VMT/SP, a VMT impact is not anticipated.

Consistency with the SCAG RTP/SCS is reviewed, and an analysis is necessary if the Project is inconsistent with the RTP/SCS. The Project area is screened to determine if it is in a Transit Priority Area or High Quality Transit Corridor. Local serving retail Projects of less than 50,000 square feet and neighborhood schools are not anticipated to cause VMT impacts. Projects in low VMT-generating TAZs may not require VMT analysis.

Per the Corona General Plan VMT Assessment, Corona residents on average travel 30 VMT per weekday. Projects that are consistent with the General Plan can tier off the General Plan EIR and therefore do not require VMT analysis.

Based upon the WRCOG VMT Screening Tool, the Project is located within a Low VMT generating TAZ. The total VMT per service population for the TAZ is estimated by WRCOG at 27.78 in comparison to the jurisdictional average of 30.52.

VMT is calculated via the City of Corona traffic model, then compared to Service Population (SP), which consists of Population and Employment. Project VMT is considered a significant impact if the Project generates VMT/SP above the Citywide VMT/SP.

Although the Project is located within a Low VMT generating TAZ, the Project TAZ VMT was extracted from the Corona General Plan traffic model for information purposes. The service population in the TAZ that contains the Project is 6,073 residents and employees. The VMT / service population is approximately 26.6 VMT/SP, which is less than the City of Corona average of approximately 30 VMT/SP.

7.2 PROJECT DESIGN FEATURES

The Project is part of the Arantine Hills Specific Plan, with connectivity and mix of uses providing opportunities for on-site interaction, such as restaurant to hotel, hotel to gas station, residential to child care, etc. The Project incorporates the following strategies to reduce automobile trips and the distance traveled per service population:

1. Increase diversity of land uses - This strategy focuses on inclusion of mixed uses within the project and in consideration of the surrounding area to minimize vehicle travel in terms of both the number of auto trips and the length of those trips. By providing a healthy mix of hotel, restaurant, retail, and day care near one another and the surrounding Arantine Hills Specific Plan residential uses, typical "isolated use" travel characteristics are estimated to be reduced by at least nine percent. An increase in diversity of suburban development can reduce VMT within a single development by as much as 12%.

2. Provide pedestrian network improvements - This strategy focuses on creating pedestrian accommodations within the project and connecting to nearby destinations. The backbone plan of pathways and bike routes for Arantine Hills provides an integrated sidewalk and trails system that conveniently links the Bedford Marketplace site to community facilities, residential neighborhoods, and parks. The VMT reduction due to the provision of a compete pedestrian network is up to 5.7%.

3. Provide traffic calming measures and low-stress bicycle network improvements - Multi-purpose trails (Off road paved trails for pedestrians and bicyclist) are located on the north side of Bedford Canyon Road, the east side of Hudson House Drive, and the south side of Clementine Way where public uses can be conveniently accessed by both visitors and residents. This design approach safely accommodates travel by those bicycling in a traditional manner, as well as e-bikes (and e-scooters) which extend the effective range of travel on the bicycle network and enhance the effectiveness of this strategy. Providing accommodations for bicycle facilities results in a potential VMT reduction of 1.7%.

7.3 PROJECT EMPLOYMENT AND VMT ESTIMATES

Project employment information was provided by the Client and is provided in Appendix "7.1". Approximately 582 jobs (including 240 temporary and 342 permanent positions) are anticipated for Bedford Marketplace. The previous approval consists of approximately 80,000 square feet of retail, which accounts for approximately 320 employees (based upon an average of 4 employees per tsf of gross floor area).

Therefore, an increase of approximately 262 jobs will occur with the Project.

The Project mix of land uses (including hotel, retail, and service-oriented uses) is anticipated to encourage trip capture on-site, resulting in a lower than usual VMT. The combination of banking, restaurant, gas, health club, retail, and a day care center in close proximity to residential and hotel uses is expected to capture trips within and near to the site.

As noted above, pathways and bike routes associated with the site provide an integrated sidewalk and trails system that conveniently links the Bedford Marketplace site to community facilities, residential neighborhoods, and parks. The Project is located within a Low VMT generating TAZ, with a VMT / service population between 26.6 and 27.8 VMT/SP, which is less than the City of Corona average of approximately 30 VMT/SP.

The VMT / SP associated with the Project could potentially fall within the range of approximately 26.6 to 31.5, but the Project location, mix of uses, and effectiveness of the

design features support a conservative estimate of 29 VMT / SP. The resulting total Project VMT is approximately 7,598 annual vehicle miles traveled for the 262 employees added by the Project, which is less than the City average per SP and considered a less than significant impact based upon City criteria.

This page intentionally left blank.

8.0 FINDINGS AND CONCLUSIONS

This study assesses the traffic circulation of the proposed Bedford Marketplace which is an expansion of commercial development area adjacent to Arantine Hills. The conclusions and recommendations are summarized below.

- Based on the currently approved commercial trip generation in the Arantine Hills Traffic Assessment (November 2018), the Project is anticipated to generate an additional 2,061 external trips per day with 281 AM peak hour external trips and 285 PM peak hour external trips.
- For Interim Year (2021) conditions, the improvements under construction at or near the Cajalco Road / I-15 Interchange area are assumed to be completed. No additional off-site intersections are anticipated to operate at unacceptable level of service, beyond those intersections previously identified under existing conditions with traffic generated by the Project.
- For Horizon Year 2035 With Project Conditions, there are no new intersections anticipated to operate at deficient level of service, beyond the intersections identified under Without Project Conditions.
- Access in and out of Bedford Marketplace occurs at three existing driveways along Bedford Canyon Road south of Eagle Glen Parkway/Cajalco Road. The northerly driveway is limited to right-in right-out (RIRO) conditions, without an opening of the median on Bedford Canyon Road. It serves as a convenient exit for vehicles leaving the Gas Station and Automated Car Wash, bound for Eagle Glen Parkway/Cajalco Road. The RIRO driveway also accommodates entering vehicles from northbound on Bedford Canyon Road.
- The main Bedford Marketplace driveway is located at a mid-point along the site frontage to Bedford Canyon Road. It is a full access location, serving left and right turns to and from Bedford Canyon Road with traffic signal control. With expansion of commercial uses at the Project site, the existing southbound left turn lane serving the main Bedford Marketplace driveway is recommended to be extended to provide 200 feet of vehicle queuing.
- The southerly Bedford Marketplace driveway is also a full access location, serving left and right turns to and from Bedford Canyon Road with cross-street stop sign control of the exiting vehicles. At this location, the existing southbound left turn lane is recommended to be extended to provide 150 feet of vehicle queuing with the expansion of commercial uses at the Project site.
- An efficient network of on-site driveways provides connectivity to all access points and facilitates the internal flow of activity between the variety of Project land uses.
- The Project mix of land uses (including hotel, retail, and service-oriented uses) is anticipated to encourage trip capture on-site, resulting in a lower than usual VMT per

service population (SP). The Project is also located within a Low VMT generating traffic analysis zone (TAZ), with a VMT / service population between 26.6 and 27.8 VMT/SP.

- The VMT / SP associated with the Project could potentially fall within the range of approximately 26.6 to 31.5, but the Project location, mix of uses, and effectiveness of the design features support a conservative estimate of 29 VMT / SP. The resulting total Project VMT is approximately 7,598 for the 262 employees added by the project, which is less than the City average per SP and considered a less than significant impact based upon City criteria.

8.1 PROJECT FAIR SHARE CALCULATIONS

The project proponent shall participate in the City of Corona Development Impact Fee Program and the Western Riverside Council of Governments Transportation Uniform Mitigation Fee Program, with appropriate credits for overlapping participation in off-site improvements (to be determined by the City of Corona).

The City of Corona Traffic Impact Study Guidelines provide a formula for estimating the project fair share percentages based on average intersection delay. The percentage of fair share for the project shall be calculated at each location as the ratio of the increase in delay from project trips divided by the difference between total delay (including) and delay at acceptable Level of Service. In addition, for non-master planned facilities where there is no reasonable expectation that future development will significantly impact the facility, the project will be responsible for 100% of the mitigation cost and "fair share" will not apply. The following equation is used to calculate the project fair share percentage:

$$\text{Project Fair Share \%} = \frac{\text{Project Only Delay}}{\text{(Total Delay "with project" – Max Acceptable Delay Traffic)}}$$

The volume-based share calculation results are based on both the project percentage of total traffic (Project Only Traffic / Horizon Year With Project Traffic) and project percentage of new traffic (Project Only Traffic / Total New Traffic). Table 8-1 present the Project peak hour fair share calculations using this procedure.

Study area intersection improvement measures for each analysis scenario are shown on Exhibit 8-1. This summary exhibit provides an overview of intersection geometrics by scenario / timeframe. Exhibit 8-1 identifies improvements that would allow the study intersections to operate at acceptable levels of service with the project and with cumulative growth, in addition to improvements for the new project access connections. The proposed Bedford Canyon Road median design with Project left turn pockets is illustrated on Exhibit 8-2.

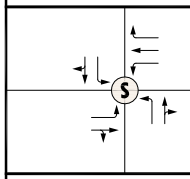
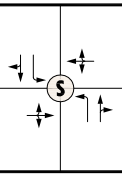
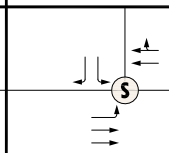
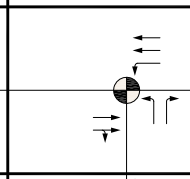
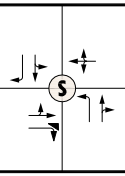
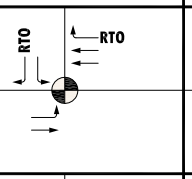
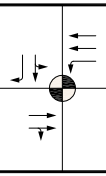
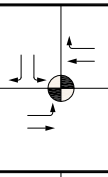
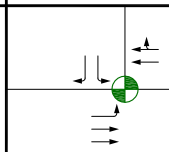
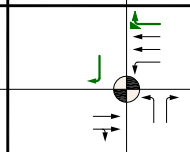
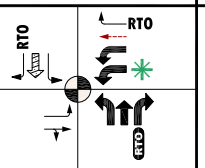
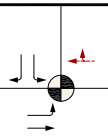
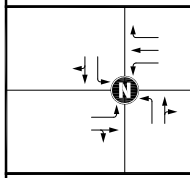
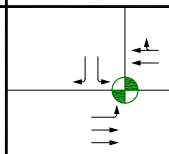
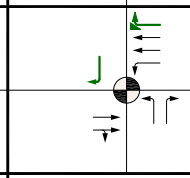
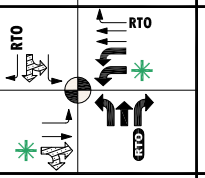
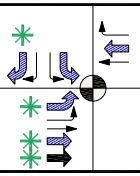
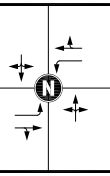
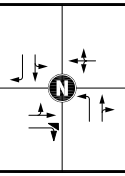
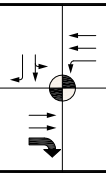
TABLE 8-1: HORIZON YEAR 2035 WITH PROJECT CONDITIONS WITH IMPROVEMENTS
FAIR SHARE PERCENTAGES FOR VARIOUS SCENARIOS

ID	Intersection	Funding Source	Traffic Control[9]	Acceptable LOS & Delay Criteria[3,4]		Without Project[5,8] (NP)	Arantine Hills SP Project Responsibility[1]	With Project[2] (Expansion above the approved 80tsf Bedford Marketplace)			
				LOS	Delay (AD)			With Project[5,8] (WP)	Project Only[6] (P)	Project Fair Share Calculations[7]	Project Share
1	Masters Dr. / California Av.	DIF									
	• Delay										
	- AM Peak Hour		AWS	C	25.0	184.1	**64%**	186.3	2.2	1%	**6%**
	- PM Peak Hour		AWS	C	25.0	55.5		57.6	2.1	6%	
2	Masters Dr. / Bennett Av.										
	• Delay										
	- AM Peak Hour		AWS	C	25.0	10.5	**32%**	10.9	0.4	-3%	**23%**
	- PM Peak Hour		AWS	C	25.0	34.8		37.7	2.9	23%	
5	Bedford Cyn. Rd. / Georgetown Dr.	DIF									
	• Delay										
	- AM Peak Hour		AWS	C	25.0	25.5	**100%**	26.7	1.2	71%	**71%**
	- PM Peak Hour		AWS	C	25.0	21.6		24.7	3.1	Less than -100%	
6	Bedford Cyn. Rd. / Eagle Glen Pkwy.										
	• Delay										
	- AM Peak Hour		TS	D	55.0	39.9	**100%**	48.8	8.9	-144%	**N/A**
	- PM Peak Hour		TS	D	55.0	46.6		54.9	8.3	Less than -100%	
7	I-15 SB Ramps / El Cerrito Rd.										
	• Delay										
	- AM Peak Hour		TS	D	55.0	63.4	**58%**	64.1	0.7	8%	**8%**
	- PM Peak Hour		TS	D	55.0	63.9		64.0	0.1	1%	
11	Grand Oaks / Cajalco Rd.										
	• Delay										
	- AM Peak Hour		TS	D	55.0	41.7	**N/A**	43.2	1.5	-13%	**N/A**
	- PM Peak Hour		TS	D	55.0	37.4		37.7	0.3	-2%	
12	Temescal Cyn. Rd. / Cajalco Rd.										
	• Delay										
	- AM Peak Hour		TS	D	55.0	60.8	**91%**	61.5	0.7	11%	**11%**
	- PM Peak Hour		TS	D	55.0	103.8		104.7	0.9	2%	
15	Bedford Cyn. Rd. / Hudson House Dr.										
	• Delay										
	- AM Peak Hour		RDB	C	25.0	4.9	**100%**	5.3	0.4	-2%	**N/A**
	- PM Peak Hour		RDB	C	25.0	5.9		6.2	0.3	-2%	
18	Masters Dr. / Christopher Ln.										
	• Delay (With Roundabout)										
	- AM Peak Hour		AWS	C	25.0	41.6	**27%**	43.7	2.1	11%	**11%**
	- PM Peak Hour		AWS	C	25.0	106.7		111.4	4.7	5%	
19	Via Castilla St. / Masters Dr.										
	• Delay (With Roundabout)										
	- AM Peak Hour		AWS	C	25.0	16.0	**100%**	16.8	0.8	-10%	**17%**
	- PM Peak Hour		AWS	C	25.0	45.6		49.7	4.1	17%	
20	Morales Wy. / Masters Dr.										
	• Delay (With Roundabout)										
	- AM Peak Hour		AWS	C	25.0	17.2	**100%**	18.3	1.1	-16%	**17%**
	- PM Peak Hour		AWS	C	25.0	52.9		58.5	5.6	17%	

1 Approved Project Fair Share Source: Arantine Hills Modified Project Traffic Study (September 2015). Prepared by Urban Crossroads, Inc.
2 Project Delay Source: Bedford Marketplace Traffic Study (September 2019). Prepared by Urban Crossroads, Inc.
3 Study area intersection Level of Service threshold as presented in Section 4.7 of this report.
4 Acceptable intersection vehicle delay based on the LOS standards shown in Table 4-1 and Table 4-2.
5 Appendix 6.1 & 6.2 include intersection LOS Without Improvements
6 Project only average intersection delay increase (With Project - Without Project).
7 Project Fair Share Calculation based on the City of Corona Traffic Study Guidelines: [Project Only/(With Project - Acceptable Delay)]
8 Improvements are included for intersections within Arantine Hills Specficic Plan (Int. #6 and #15). Therefore, intersection delay is not anticipated to exceed LOS Threshold.
9 TS = Traffic Signal; CSS = Cross-street Stop; AWS = All-Way Stop; RDB = Roundabout

R:\UXRjobs_12100-12500\12554\Excel\[12554 - Report.xlsx]8-1

EXHIBIT 8-1 (1 OF 3): INTERSECTION LANE GEOMETRY AND TRAFFIC CONTROL, BY SCENARIO

1 MASTERS DR. & CALIFORNIA DR.	2 MASTERS DR. & BENNETT AV.	3 MASTERS DR. & EAGLE GLEN PKWY.	4 BEDFORD CYN. RD. & EL CERRITO RD.	5 BEDFORD CYN. RD. & GEORGETOWN DR.	6 BEDFORD CYN. RD. & EAGLE GLEN PKWY.	7 I-15 SB RAMPS & EL CERRITO RD.	8 I-15 SB RAMPS & CAJALCO RD.	
								EXISTING (2017/2018)
SAME AS EXISTING	***SAME AS EXISTING***			***SAME AS EXISTING***		***SAME AS EXISTING***		IY (2021) WITHOUT IMPROVEMENTS LANE CONFIGURATION
	***NO IMPROVEMENTS***			***NO IMPROVEMENTS***		***NO IMPROVEMENTS***		IY (2021) WITHOUT PROJECT WITH IMPROVEMENTS
SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENT		***NO IMPROVEMENTS***	***NO IMPROVEMENTS***		***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***		***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	HY 2035 WITHOUT PROJECT WITH IMPROVEMENTS
SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENT	***NO IMPROVEMENTS***	***NO IMPROVEMENTS***	***NO IMPROVEMENTS***	***NO IMPROVEMENTS***	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	***NO IMPROVEMENTS***	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	IY (2021) WITH PROJECT WITH IMPROVEMENTS
SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENT	***SAME AS HY 2035 WITHOUT PROJECT IMPROVEMENT***	***NO IMPROVEMENTS***	***NO IMPROVEMENTS***	***SAME AS HY 2035 WITHOUT PROJECT IMPROVEMENT***	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	***SAME AS HY 2035 WITHOUT PROJECT IMPROVEMENT***	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	HY 2035 WITH PROJECT WITH IMPROVEMENTS

LEGEND:

- = EXISTING TRAFFIC SIGNAL
- = APPROVED TRAFFIC SIGNAL IMPROVEMENT
- = RECENTLY INSTALLED TRAFFIC SIGNAL
- = EXISTING ALL WAY STOP

- = EXISTING LANE
- = EXISTING FREE-RIGHT TURN LANE
- = RECENTLY BUILT LANE IMPROVEMENT
- = LANE REDUCTION/CONFIGURATION DURING INTERCHANGE CONSTRUCTION
- = APPROVED (CURRENT PHASE) LANE IMPROVEMENT
- = APPROVED (CURRENT PHASE) PLANNED LANE IMPROVEMENT
- = APPROVED (CURRENT PHASE) LANE RESTRIPING

RTO = EXISTING RIGHT TURN OVERLAP

RTO = APPROVED (CURRENT PHASE) RIGHT TURN OVERLAP PHASING IMPROVEMENT

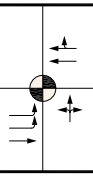
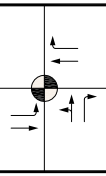
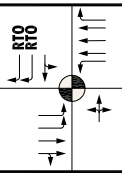
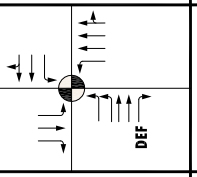
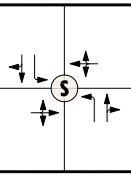
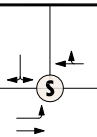
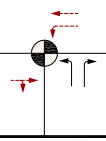
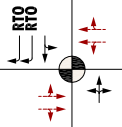
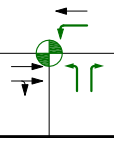
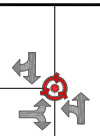
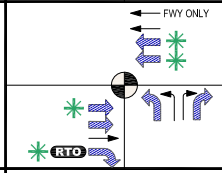
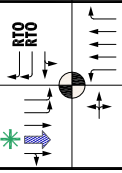
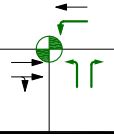
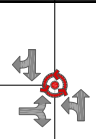
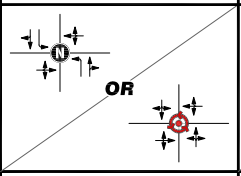
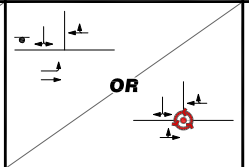
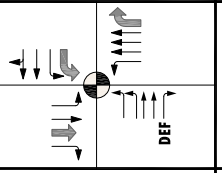
= APPROVED (CURRENT PHASE) PROVIDE RECEIVING LANE

NOTE: "APPROVED" IMPROVEMENTS ARE CONSISTENT WITH THE IMPROVEMENTS IDENTIFIED IN THE ARANTINE HILLS MODIFIED TRAFFIC STUDY (SEPT. 2015).

12554 - 003_improvements.dwg

URBAN CROSSROADS

EXHIBIT 8-1 (2 OF 3): INTERSECTION LANE GEOMETRY AND TRAFFIC CONTROL, BY SCENARIO

9 I-15 NB RAMPS & EL CERRITO RD.	10 I-15 NB RAMPS & CAJALCO RD.	11 GRAND OAKS & CAJALCO RD.	12 TEMESCAL CYN. RD. & CAJALCO RD.	13 CLEMENTINE WY. & EAGLE GLEN PKWY.	15 BEDFORD CYN. RD. & HUDSON HOUSE DR.	18 MASTERS DR. & CHRISTOPHER LN.	19 VIA CASTILLA ST. & MASTERS DR.	
				***FUTURE***	***FUTURE***			EXISTING (2017/2018)
SAME AS EXISTING			***SAME AS EXISTING***			***SAME AS EXISTING***	***SAME AS EXISTING***	IY (2021) WITHOUT IMPROVEMENTS LANE CONFIGURATION
NO IMPROVEMENTS			***NO IMPROVEMENTS***					IY (2021) WITHOUT PROJECT WITH IMPROVEMENTS
NO IMPROVEMENTS	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***		***NO IMPROVEMENTS***	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	HY 2035 WITHOUT PROJECT WITH IMPROVEMENTS
NO IMPROVEMENTS	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	***NO IMPROVEMENTS***	***NO IMPROVEMENTS***	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	IY (2021) WITH PROJECT WITH IMPROVEMENTS
NO IMPROVEMENTS	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	***SAME AS HY 2035 WITHOUT PROJECT IMPROVEMENTS***	***NO IMPROVEMENTS***	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	HY 2035 WITH PROJECT WITH IMPROVEMENTS

LEGEND:

- = EXISTING TRAFFIC SIGNAL
- = APPROVED TRAFFIC SIGNAL IMPROVEMENT
- = RECENTLY INSTALLED TRAFFIC SIGNAL
- = EXISTING ALL WAY STOP
- = STOP SIGN CONTROL
- = APPROVED ROUNDABOUT IMPROVEMENT

- = EXISTING LANE
- = EXISTING FREE-RIGHT TURN LANE
- = RECENTLY BUILT LANE IMPROVEMENT
- = LANE REDUCTION/CONFIGURATION DURING INTERCHANGE CONSTRUCTION
- = APPROVED (CURRENT PHASE) LANE IMPROVEMENT
- = APPROVED (CURRENT PHASE) PLANNED LANE IMPROVEMENT
- = APPROVED (CURRENT PHASE) LANE RESTRIPING

RTO = EXISTING RIGHT TURN OVERLAP

RTO = APPROVED (CURRENT PHASE) RIGHT TURN OVERLAP PHASING IMPROVEMENT

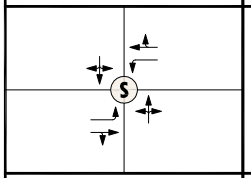
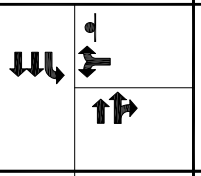
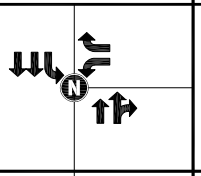
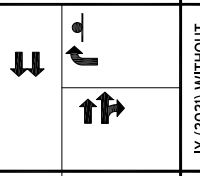
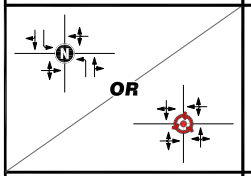
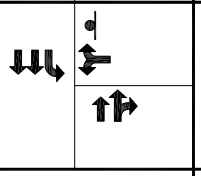
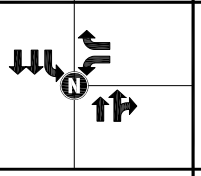
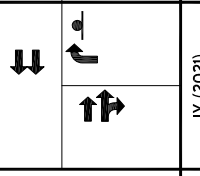
= APPROVED (CURRENT PHASE) PROVIDE RECEIVING LANE

NOTE: "APPROVED" IMPROVEMENTS ARE CONSISTENT WITH THE IMPROVEMENTS IDENTIFIED IN THE ARANTINE HILLS MODIFIED TRAFFIC STUDY (SEPT. 2015).

12554 - 003_improvements.dwg

URBAN CROSSROADS

EXHIBIT 8-1 (3 OF 3): INTERSECTION LANE GEOMETRY AND TRAFFIC CONTROL, BY SCENARIO

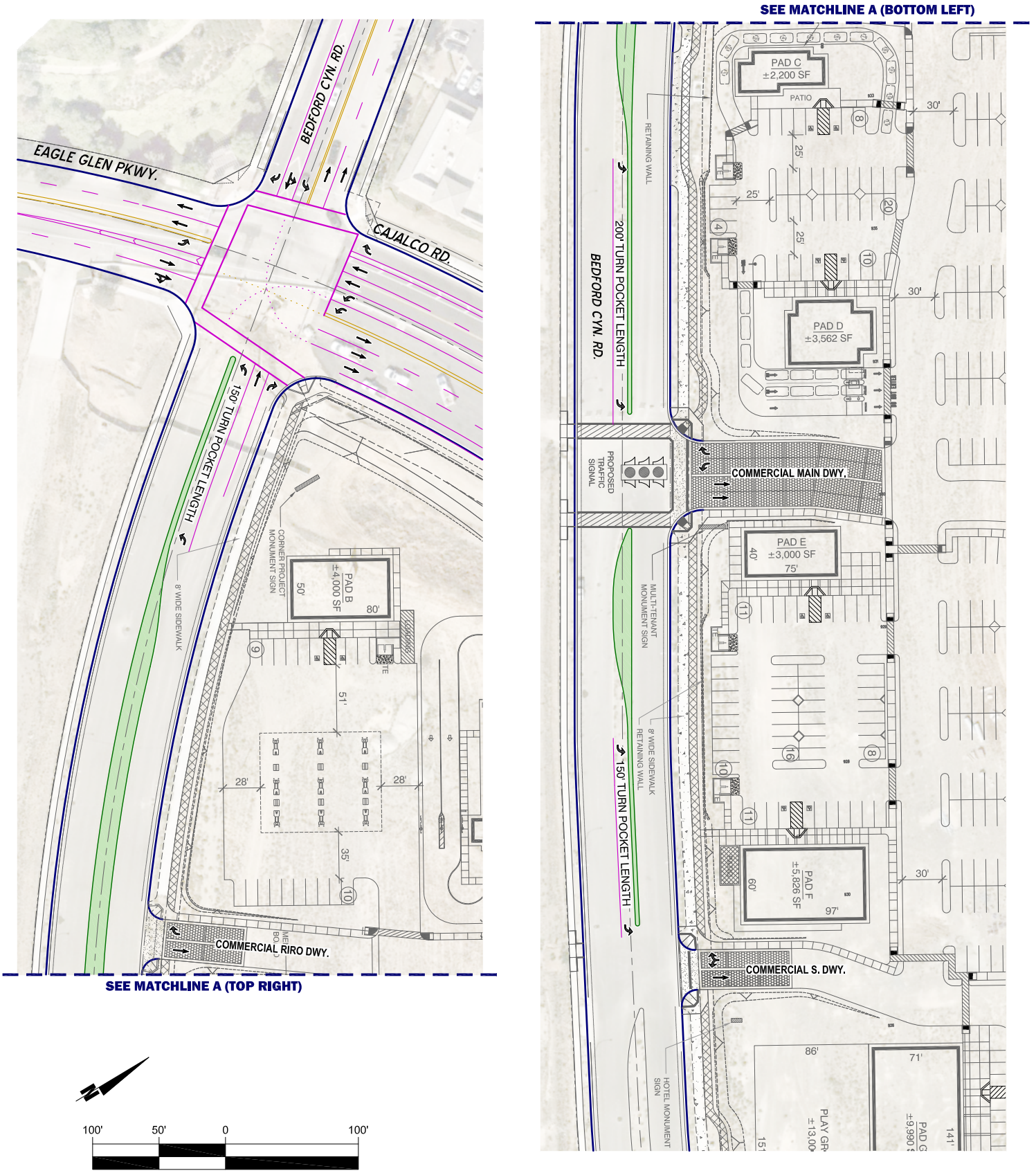
20 MORALES WY. & MASTERS DR.	22 BEDFORD CYN. RD. & COMMERCIAL S. DWY.	23 BEDFORD CYN. RD. & COMMERCIAL MAIN DWY.	24 BEDFORD CYN. RD. & COMMERCIAL (RIRO) DWY.	
	***FUTURE***	***FUTURE***	***FUTURE***	EXISTING (2017/2018)
SAME AS EXISTING				IY (2021) WITHOUT IMPROVEMENTS LANE CONFIGURATION
				IY (2021) WITHOUT PROJECT WITH IMPROVEMENTS
SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	HY 2035 WITHOUT PROJECT WITH IMPROVEMENTS
SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	IY (2021) WITH PROJECT WITH IMPROVEMENTS
SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	***SAME AS IY (2021) WITHOUT PROJECT IMPROVEMENTS***	HY 2035 WITH PROJECT WITH IMPROVEMENTS

LEGEND:

- = EXISTING TRAFFIC SIGNAL
- = APPROVED TRAFFIC SIGNAL IMPROVEMENT
- = EXISTING ALL WAY STOP
- = STOP SIGN CONTROL
- = APPROVED ROUNDABOUT IMPROVEMENT
- = EXISTING LANE
- = APPROVED (CURRENT PHASE) LANE IMPROVEMENT

NOTE: "APPROVED" IMPROVEMENTS ARE CONSISTENT WITH THE IMPROVEMENTS IDENTIFIED IN THE ARANTINE HILLS MODIFIED TRAFFIC STUDY (SEPT. 2015).

EXHIBIT 8-2: BEDFORD CANYON ROAD MEDIAN DESIGN WITH PROJECT LEFT TURN POCKETS



100' 50' 0 100'

SCALE: 1" = 100'

12554 - 004_striping.dwg

URBAN CROSSROADS

This page intentionally left blank.

APPENDIX J:

Sewer System Hydraulic Analysis Bedford Marketplace

This Page Intentionally Left Blank

Sewer System Hydraulic Analysis
Bedford Marketplace
Parcel Map 37788

Prepared for

Bedford Marketplace, LLC






February 2020

Hunsaker
&
Associates

Hunsaker
& Associates
I R V I N E, I N C.
Inland Empire Region

PLANNING
ENGINEERING
SURVEYING
GOVERNMENT RELATIONS

IRVINE
LOS ANGELES
RIVERSIDE
SAN DIEGO

Sewer System Hydraulic Analysis

Date: February 14, 2020

For:
City of Corona Department of Water and Power
755 Public Safety Way
Corona, CA 92880

By:
Paul R. Huddleston, P.E.
Principal
Hunsaker & Associates, Inc.

Project: **Bedford Marketplace, Parcel Map 37788**

Introduction

Hunsaker & Associates Irvine, Inc. (H&A) is pleased to submit the supplemental Sewer System Hydraulic Analysis for Bedford Marketplace. This hydraulic analysis has been prepared to describe the proposed sewer system for the aforementioned retail commercial and hotel project in the City of Corona. The project lies within the jurisdiction of City of Corona Department of Water and Power and their standards have been used for this report. Hydraulic calculations were prepared using FlowMaster software to model peak sewer flows.

The goal of this hydraulic analysis is to evaluate the sewer collection system for the proposed retail commercial and hotel development identifying the general location and size of the pipelines. This evaluation is based on existing and known conditions and should be re-evaluated if these conditions change or new information becomes available. Any interpretation of the information presented in this report should be referred to Hunsaker & Associates to ensure the integrity of the results.

This Sewer System Hydraulic Analysis is tiered off a larger study prepared for the Arantine Hills Specific Plan, a master planned community approved for up to a maximum of 1,806 dwelling units and 80,000 square feet of General Commercial uses. The Applicant, Bedford Marketplace, LLC, proposes to expand the Bedford Marketplace from 80,000 square feet of commercial uses to approximately 134,378 square feet of commercial uses plus a 135-room hotel on approximately 27.8 acres.

Project Location

The overall Arantine Hills project comprises approximately 275.7 acres and is located south of Cajalco Road, West of Interstate 15 and north of Bedford Creek in the City of Corona, County of Riverside, California. More specifically, Bedford Marketplace comprises of 27.8 acres and is located east of Bedford Canyon Road, west of Interstate 15, south of Cajalco Road and north of an existing sewer lift station. The general project location is shown on the exhibit entitled, “Vicinity Map – Figure 1.”

PRINCIPALS:
DAVID FRATTONE
FRED GRAYLEE
BRADLEY HAY
PAUL HUDDLESTON
KAMAL H. KARAM
DOUGLAS L. STALEY
KRIS WEBER
JOESEPH E. WIGHTMAN

FOUNDING PARTNERS:
RICHARD HUNSAKER
TOM R. McGANNON
JOHN A. MICHLER
DOUGLAS G. SNYDER

2900 Adams Street
Suite A-15
Riverside, California 92504
(951) 352-7200 PH
(951) 352-8269 FX
www.hunsaker.com

Summary of Findings

1. The Bedford Marketplace commercial center has 2 points of connection to the existing 15-inch main within the sewer lift station access road. The proposed sewer system schematic is shown on the attached exhibit entitled "Proposed Sewer System Model - Figure 3."

2. The total estimated sanitary sewer flows for the proposed Bedford Marketplace commercial center (Parcel Map 37788) were based upon the direction of the "City of Corona Department of Water and Power, Sewer Master Plan" – Section 4.0.

3. The sewer system for the proposed Bedford Marketplace commercial center (Parcel Map 37788) was designed to meet all of the design criteria contained within "City of Corona Department of Water and Power, Design Policy" updated November 2012.

Sewer System Analysis

In order to calculate the pipe sizes and capacity of the proposed sewer system, we have prepared a hydraulic model using FlowMaster 2009 (v8.0) by Haestad Methods. The summary of outputs from the model runs is included in the Appendix of this report. The plan layout of the model is located in the attached exhibit entitled "Proposed Sewer System Model – Figure 3."

Sewer System Design Criteria

Sanitary sewers are designed to carry the estimated wastewater flows during peak periods. Sanitary sewers are also designed to carry these wastes while flowing only part full. The surplus design capacity, or safety factor, is available as a precaution for unusual flow peaking and to permit the sewer to function even with some minor blockage.

Sanitary sewers shall be designed using the following Pipeline Hydraulics Criteria required by the "City of Corona Department of Water and Power":

- Manning's "n" of 0.013
- Minimum velocity = 2 fps or Minimum slope = 0.0100
- Maximum velocity = 8 fps
- Pipes ≤ 10-inch ≡ D/d = 50% (PWWF D/d ≤ 0.82)
- Pipes ≥ 12-inch ≡ D/d = 67% (PWWF D/d ≤ 0.82)

The minimum slope was designated in accordance with Section C.2 'Pipeline Design Criteria' in the attached "City of Corona Department of Water and Power, Design Policy"

- Preferred minimum slope for 8-inch pipes = 0.0040 ft/ft
- Preferred minimum slope for 10-inch pipes = 0.0025 ft/ft
- Preferred minimum slope for 12-inch pipes = 0.0020 ft/ft
- Preferred minimum slope for 15-inch pipes = 0.0012 ft/ft

Estimated Onsite Sewer Flows

The proposed sewer systems for Bedford Marketplace commercial center and the residential neighborhoods within Tract 37644 both connect to an existing 12-inch sewer main within Bedford Canyon Road. The estimated wastewater flow for both developments is based upon the "Unit Flow Factors" – Section 4-3 of "City of Corona Department of Water and Power, Sewer Master Plan", as the "City of Corona Department of Water and Power Design Policy", dated November 2012.

Unit Flow Requirements

For the proposed project, the unit flows for the average day sewer generation were determined from Table 4-2 of the 2005 Sewer Master Plan Report (Included in Appendix).

- Commercial =1,000 gpd/ac
- Hotel =125 gpd/room

The peaking factor for this study is the same factor utilized in the Master Plan and previous analysis, and are as provided in Section 4-4 of the Sewer Master Plan (included in Appendix). The following equations were used to determine the 'Peak Dry Weather Flow' and 'Peak Wet Weather Flow':

- Peak Dry Weather Flow
  $Q_{Peak\ Dry\ (cfs)} = 1.95 \times Q_{Avg\ (cfs)}^{0.92}$
  $Q_{Avg\ Dry\ (cfs)}$ = Average Dry Weather Flow

- Peak Wet Weather Flow (the larger of the two following equations govern)
  1) $Q_{PWWF\ (cfs)} = 2.6 \times Q_{Avg\ Dry\ (cfs)}$
  2) $Q_{PWWF\ (cfs)} = 1.265 \times Q_{Peak\ Dry\ (cfs)}$

Table 1 – Residential Tract 37644 Estimated Sewer Flows

Land Use	Proposed Units	Demand	$Q_{Avg.\ Dry}$	$Q_{Peak\ Dry} = 1.95 \times Q_{Avg\ Dry}^{0.92}$	$Q_{PWWF} = 2.6 \times Q_{Avg\ Dry}$	$Q_{PWWF} = 1.265 \times Q_{Peak\ Dry}$
Hotel	135 rooms	125 gpd/room	16,875 gpd 0.0261 cfs	44,049 gpd 0.0682 cfs	43,875 gpd 0.0679 cfs	**55,722 gpd** **0.0862 cfs**
Commercial	27.8 ac	1,000 gpd/ac	27,800 gpd 0.0430 cfs	69,725 gpd 0.1079 cfs	72,280 gpd 0.1118 cfs	**88,203 gpd** **0.1365 cfs**
Sum	---	---	44,685 gpd 0.0691 cfs	113,774 gpd 0.1760 cfs	116,155 gpd 0.1797 cfs	**143,925 gpd** **0.2227 cfs**

Sewer System Results

Table 2 – Estimated PWWF Sewer Calculation Summary

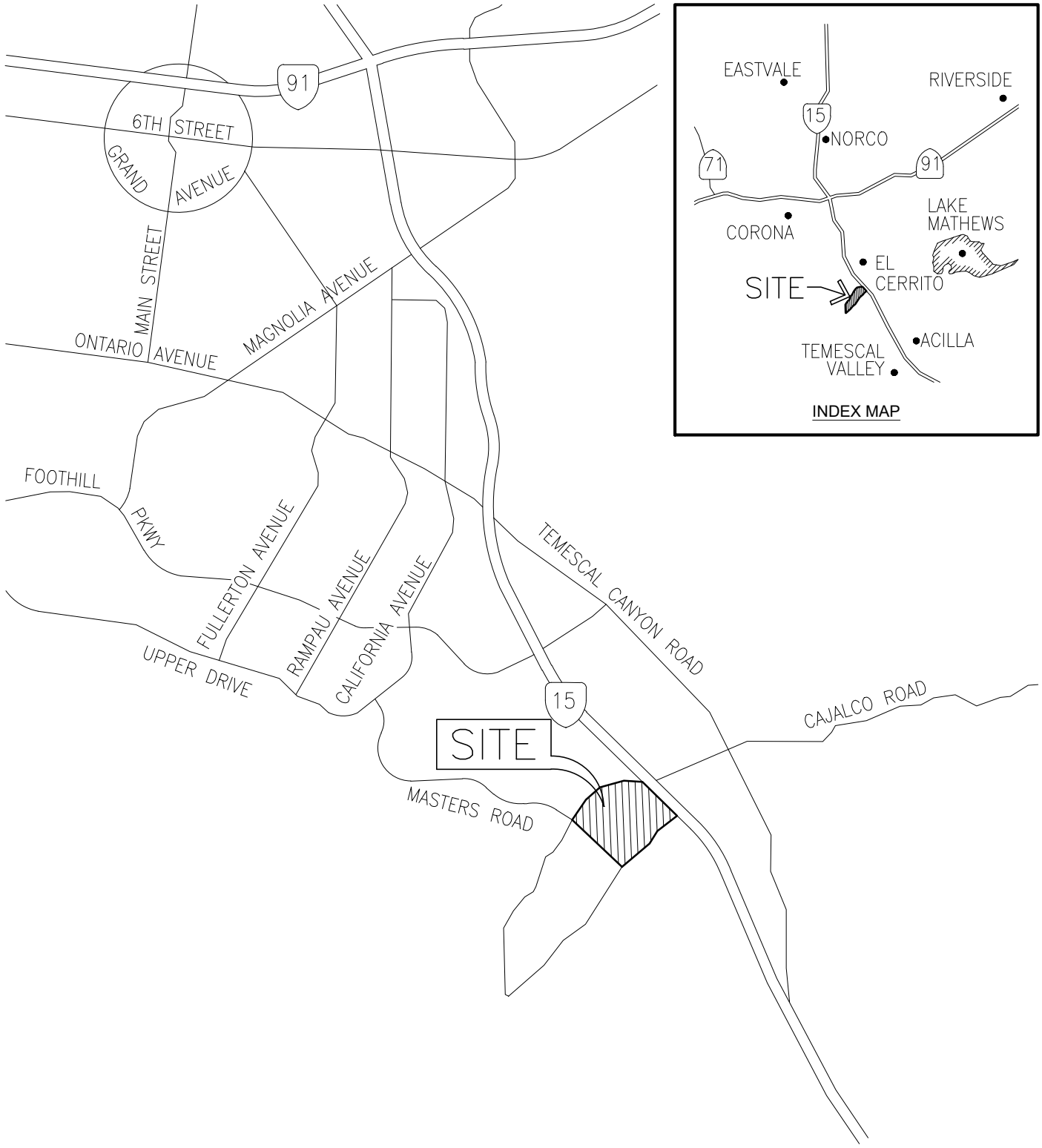
Pipe No.	Demand	Sum Demand	Pipe Dia (in)	Slope (ft/ft)	Flow Q_{PWWF} (gpd)	Velocity (ft/s)	Calc'd D/d	Agency Max D/d (PWWF)
1	4.05 ac	4.05 ac	8	0.0100	16,767	1.40	0.104	0.82
2	0.00 ac	4.05 ac	8	0.0100	16,767	1.40	0.104	0.82
3	4.00 ac	8.05 ac	8	0.0100	33,327	1.72	0.134	0.82
4	1.75 ac	9.80 ac	8	0.0100	40,572	1.82	0.149	0.82
5	0.00 ac	9.80 ac	8	0.0100	40,572	1.82	0.149	0.82
6	6.92 ac	6.92 ac	8	0.0100	28,649	1.64	0.134	0.82
7	0.00 ac	6.92 ac	8	0.0100	28,649	1.64	0.134	0.82
8	1.80 ac	8.72 ac	8	0.0100	36,101	1.76	0.149	0.82
9	0.00 ac	8.72 ac	8	0.0100	36,101	1.76	0.149	0.82
10	0.00 ac	18.52 ac	8	0.0100	76,673	2.20	0.210	0.82
11	0.00 ac	18.52 ac	15	0.0020	76,673 (1,338,817 total)	2.56	0.624	0.82
12	6.14 ac 135 rooms	6.14 ac 135 rooms	8	0.0100	81,142	2.24	0.209	0.82
13	0.00 ac	6.14 ac 135 rooms	8	0.0100	81,142	2.24	0.209	0.82
14	0.00 ac	6.14 ac 135 rooms	8	0.0100	81,142	2.24	0.209	0.82
15	0.00 ac	6.14 ac 135 rooms	8	0.0100	81,142	2.24	0.225	0.82
16	0.00 ac	24.66 ac 135 rooms	15	0.0020	157,814 (1,419,958 total)	2.59	0.656	0.82

We sincerely trust these calculations will provide sufficient evidence that the proposed sewer system for Bedford Marketplace commercial center within the Bedford development, Parcel Map 37788, provides sufficient capacity to accommodate the proposed development and meets the City of Corona Department of Water and Power's Sewer Design Guidelines based on the preceding summaries and attached calculations. Please contact me at (951) 509-7055 if you have any questions.

Sincerely,

Brian R. Lowell, PE





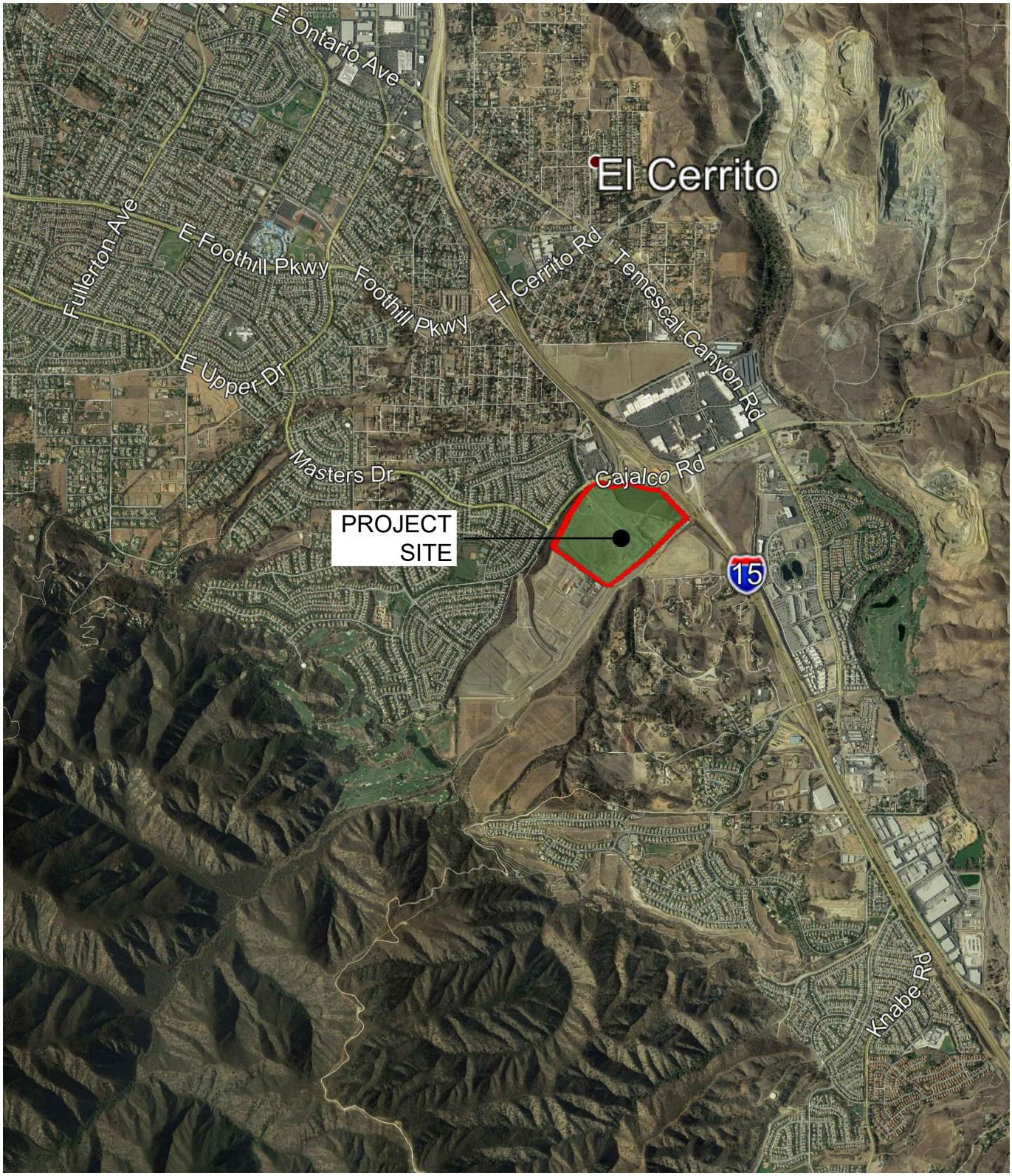
HUNSAKER & ASSOCIATES
IRVINE, INC
INLAND EMPIRE REGION
2900 ADAMS STREET, SUITE A-15
RIVERSIDE CA 92504 (951)352-7200
PLANNING/ENGINEERING/SURVEYING/GOVERNMENT RELATIONS

N
W HUNSAKER E
S

NOT TO SCALE

FIGURE 1: VICINITY MAP

H:\00539\Engineering\Reports\Sewer Study\Commercial\Parts\Maps\00539-Fig-1-Vicinity.dwg



HUNSAKER & ASSOCIATES
IRVINE, INC
INLAND EMPIRE REGION
2900 ADAMS STREET, SUITE A-15
RIVERSIDE CA 92504 (951)352-7200
PLANNING/ENGINEERING/SURVEYING/GOVERNMENT RELATIONS

N
W HUNSAKER E
S

FIGURE 2: AERIAL PHOTOGRAPH

H:\00539\Engineering\Reports\Sewer Study\Commercial\Parts\Maps\00539-Fig-2-Vicinity-Aerial.dwg

LEGEND

- PROPOSED 8–INCH ONSITE GRAVITY SEWER MAIN
- EXISTING 8–INCH OFFSITE GRAVITY SEWER MAIN
- EXISTING 10–INCH OFFSITE GRAVITY SEWER MAIN
- EXISTING 12–INCH OFFSITE GRAVITY SEWER MAIN
- EXISTING 15–INCH OFFSITE GRAVITY SEWER MAIN
- (#) PROPOSED ONSITE SEWER REACH
- MANHOLE LOCATION AND NUMBER

NOTE:

1. SEE APPENDIX FOR FLOWMASTER CALCULATIONS

SEWER DEMANDS

HOTEL Qavg = 125 GPD/ROOM
COMMERCIAL Qavg = 1,000 GPD/AC

$Qpeak = 1.95 \times (Qavg)^{0.92}$
$Qpwwf = 2.6 \times (Qavg)$



HUNSAKER & ASSOCIATES
IRVINE, INC
INLAND EMPIRE REGION
2900 ADAMS STREET, SUITE A–15
RIVERSIDE CA 92504 (951)352–7200
PLANNING/ENGINEERING/SURVEYING/GOVERNMENT RELATIONS

CITY OF CORONA DEPARTMENT OF WATER AND POWER
BEDFORD MARKETPLACE
TRACT MAP NUMBER 37788
PROPOSED SEWER SYSTEM MODEL

W.O. No. 4334–2 | DATE: Feb 14, 2020

FIGURE 3 OF 3

PLOTTED BY: BRIANL DATE: Feb. 14, 2020 TIME: 10:14 AM H:\00539\Engineering\Reports\Sewer Study\Commercial\Parts\Maps\00539-Fig-3-Sewer_Exhibit.dwg

APPENDIX

SEWER SYSTEM

FLOWMASTER CALCULATIONS

Worksheet for 8-INCH PIPE

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Normal Depth	0.33	ft
Diameter	0.67	ft

Results

Discharge	0.60	ft^3/s
Flow Area	0.17	ft^2
Wetted Perimeter	1.05	ft
Hydraulic Radius	0.17	ft
Top Width	0.67	ft
Critical Depth	0.37	ft
Percent Full	50.0	%
Critical Slope	0.00736	ft/ft
Velocity	3.46	ft/s
Velocity Head	0.19	ft
Specific Energy	0.52	ft
Froude Number	1.19	
Maximum Discharge	1.30	ft^3/s
Discharge Full	1.21	ft^3/s
Slope Full	0.00250	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	50.00	%
Downstream Velocity	Infinity	ft/s

Worksheet for 8-INCH PIPE

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.33	ft
Critical Depth	0.37	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00736	ft/ft

Cross Section for 8-INCH PIPE

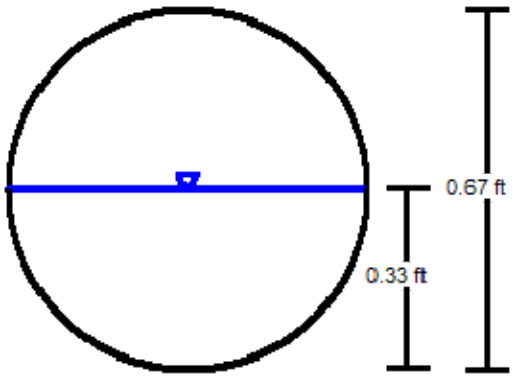
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Normal Depth	0.33	ft
Diameter	0.67	ft
Discharge	0.60	ft³/s

Cross Section Image



V: 1
H: 1

Worksheet for 10-INCH PIPE

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Normal Depth	0.42	ft
Diameter	0.83	ft

Results

Discharge	1.10	ft^3/s
Flow Area	0.27	ft^2
Wetted Perimeter	1.31	ft
Hydraulic Radius	0.21	ft
Top Width	0.83	ft
Critical Depth	0.47	ft
Percent Full	50.0	%
Critical Slope	0.00691	ft/ft
Velocity	4.02	ft/s
Velocity Head	0.25	ft
Specific Energy	0.67	ft
Froude Number	1.24	
Maximum Discharge	2.36	ft^3/s
Discharge Full	2.19	ft^3/s
Slope Full	0.00250	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	50.00	%
Downstream Velocity	Infinity	ft/s

Worksheet for 10-INCH PIPE

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.42	ft
Critical Depth	0.47	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00691	ft/ft

Cross Section for 10-INCH PIPE

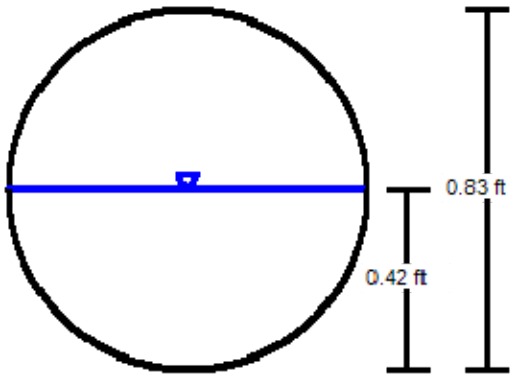
Project Description

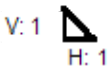
Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Normal Depth	0.42	ft
Diameter	0.83	ft
Discharge	1.10	ft³/s

Cross Section Image





Worksheet for 12-INCH PIPE

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Normal Depth	0.67	ft
Diameter	1.00	ft

Results

Discharge	2.79	ft^3/s
Flow Area	0.56	ft^2
Wetted Perimeter	1.91	ft
Hydraulic Radius	0.29	ft
Top Width	0.94	ft
Critical Depth	0.72	ft
Percent Full	66.7	%
Critical Slope	0.00825	ft/ft
Velocity	5.02	ft/s
Velocity Head	0.39	ft
Specific Energy	1.06	ft
Froude Number	1.15	
Maximum Discharge	3.83	ft^3/s
Discharge Full	3.56	ft^3/s
Slope Full	0.00614	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	66.67	%
Downstream Velocity	Infinity	ft/s

Worksheet for 12-INCH PIPE

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.67	ft
Critical Depth	0.72	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00825	ft/ft

Cross Section for 12-INCH PIPE

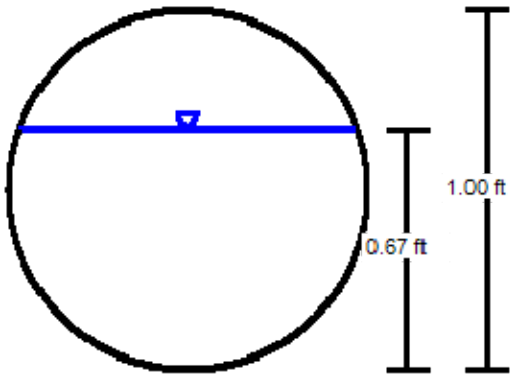
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Normal Depth	0.67	ft
Diameter	1.00	ft
Discharge	2.79	ft³/s

Cross Section Image



V: 1
H: 1

Worksheet for 15-inch pipe

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Normal Depth	0.84	ft
Diameter	1.25	ft

Results

Discharge	2.28	ft^3/s
Flow Area	0.87	ft^2
Wetted Perimeter	2.40	ft
Hydraulic Radius	0.36	ft
Top Width	1.18	ft
Critical Depth	0.60	ft
Percent Full	67.0	%
Critical Slope	0.00562	ft/ft
Velocity	2.61	ft/s
Velocity Head	0.11	ft
Specific Energy	0.94	ft
Froude Number	0.53	
Maximum Discharge	3.11	ft^3/s
Discharge Full	2.89	ft^3/s
Slope Full	0.00125	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	67.00	%
Downstream Velocity	Infinity	ft/s

Worksheet for 15-inch pipe

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.84	ft
Critical Depth	0.60	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00562	ft/ft

Cross Section for 15-inch pipe

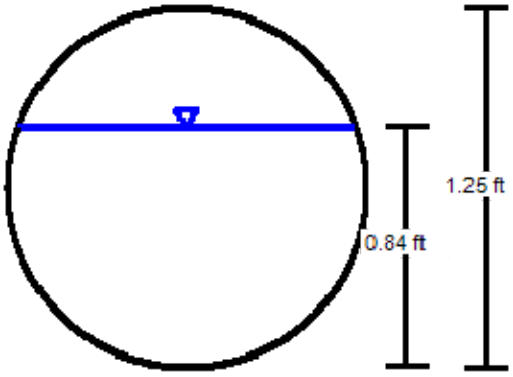
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Normal Depth	0.84	ft
Diameter	1.25	ft
Discharge	2.28	ft³/s

Cross Section Image



V: 1
H: 1

LOS ANGELES COUNTY
SEWER GENERATION RATES

TABLE 1

LOADINGS FOR EACH CLASS OF LAND USE

DESCRIPTION	UNIT OF MEASURE	FLOW (Gallons Per Day)	COD (Pounds Per Day)	SUSPENDED SOLIDS (Pounds Per Day)
R E S I D E N T I A L				
Single Family Home	Parcel	260	1.22	0.59
Duplex	Parcel	312	1.46	0.70
Triplex	Parcel	468	2.19	1.05
Fourplex	Parcel	624	2.92	1.40
Condominiums	Parcel	195	0.92	0.44
Single Family Home (reduced rate)	Parcel	156	0.73	0.35
Five Units or More	No. of Dwlg. Units	156	0.73	0.35
Mobile Home Parks	No. of Spaces	156	0.73	0.35
C O M M E R C I A L				
Hotel/Motel/Rooming House	Room	125	0.54	0.28
Store	1000 ft^2	100	0.43	0.23
Supermarket	1000 ft^2	150	2.00	1.00
Shopping Center	1000 ft^2	325	3.00	1.17
Regional Mall	1000 ft^2	150	2.10	0.77
Office Building	1000 ft^2	200	0.86	0.45
Professional Building	1000 ft^2	300	1.29	0.68
Restaurant	1000 ft^2	1,000	16.68	5.00
Indoor Theatre	1000 ft^2	125	0.54	0.28
Car Wash				
Tunnel - No Recycling	1000 ft^2	3,700	15.86	8.33
Tunnel - Recycling	1000 ft^2	2,700	11.74	6.16
Wand	1000 ft^2	700	3.00	1.58
Financial Institution	1000 ft^2	100	0.43	0.23
Service Shop	1000 ft^2	100	0.43	0.23
Animal Kennels	1000 ft^2	100	0.43	0.23
Service Station	1000 ft^2	100	0.43	0.23
Auto Sales/Repair	1000 ft^2	100	0.43	0.23
Wholesale Outlet	1000 ft^2	100	0.43	0.23
Nursery/Greenhouse	1000 ft^2	25	0.11	0.06
Manufacturing	1000 ft^2	200	1.86	0.70
Dry Manufacturing	1000 ft^2	25	0.23	0.09
Lumber Yard	1000 ft^2	25	0.23	0.09
Warehousing	1000 ft^2	25	0.23	0.09
Open Storage	1000 ft^2	25	0.23	0.09
Drive-in Theatre	1000 ft^2	20	0.09	0.05

TABLE 1
(continued)
LOADINGS FOR EACH CLASS OF LAND USE

DESCRIPTION	UNIT OF MEASURE	FLOW (Gallons Per Day)	COD (Pounds Per Day)	SUSPENDED SOLIDS (Pounds Per Day)
C O M M E R C I A L				
Night Club	1000 ft^2	350	1.50	0.79
Bowling/Skating	1000 ft^2	150	1.76	0.55
Club	1000 ft^2	125	0.54	0.27
Auditorium, Amusement	1000 ft^2	350	1.50	0.79
Golf Course, Camp, and Park (Structures and Improvements	1000 ft^2	100	0.43	0.23
Recreational Vehicle Park	No. of Spaces	55	0.34	0.14
Convalescent Home	Bed	125	0.54	0.28
Laundry	1000 ft^2	3,825	16.40	8.61
Mortuary/Cemetery	1000 ft^2	100	1.33	0.67
Health Spa, Gymnasium				
With Showers	1000 ft^2	600	2.58	1.35
Without Showers	1000 ft^2	300	1.29	0.68
Convention Center, Fairground, Racetrack, Sports Stadium/Arena	Average Daily Attendance	10	0.04	0.02
I N S T I T U T I O N A L				
College/University	Student	20	0.09	0.05
Private School	1000 ft^2	200	0.86	0.45
Church	1000 ft^2	50	0.21	0.11

CITY OF CORONA
DEPARTMENT OF WATER AND POWER

DESIGN POLICY
NOVEMBER 2012



CITY OF CORONA

DEPARTMENT OF WATER AND POWER
DESIGN POLICY

NOVEMBER 2012

Tom Koper

Tom Koper, PE
District Engineer
R.C.E. No. 50258

11-28-2012
Date

C. WATER RECLAMATION (SEWER) COLLECTION SYSTEM

1. GENERAL

The following sections provide criteria to be used in the design of water reclamation collection (sewer) systems. The developer and his engineer shall be responsible to ensure all design work is in conformance with this Design Policy, the City of Corona Standard Plans and Specifications for sewer systems, State of California Department of Health Services Criteria for the Separation of Water Mains and Sanitary Sewers, as shown on City Standard Drawings 419, and generally accepted standards of good engineering practice. Two sets of calculations are required with first plan check.

2. PIPELINE DESIGN CRITERIA

a. Velocity - Design Engineer shall calculate the velocity of flow under proposed conditions. Velocity shall not be less than 2 fps a minimum of once per day to provide sufficient scouring action for self-cleaning. Maximum velocity shall not be greater than 8 fps at design flow. Where 2 fps velocity cannot be provided at least once per day, the slope shall be at least 0.01 ft/ft unless approved in writing by DWP.

b. Use a Manning's "n" of 0. 013 for sewer design.

c. Maximum allowable depth of flow (d/D) at peak flows, is as follows:

   1) 10-inch and smaller 50 percent

   2) 12-inch and larger 67 percent

d. For more information refer to the engineering report in the Sewer Master Plan for Trunk Line Sewers.

e. Minimum slope(s) shall be:

   S = 0.0040 for 8-inch sewer

   S = 0.0025 for 10-inch sewer

   S = 0.0020 for 12-inch sewer

   S = 0.0012 for 15-inch sewer

   S = 0.0010 for 18-inch sewer

   S = 0.0008 for 21-inch sewer

   S = 0.0007 for 24-inch sewer

   Design slopes conforming to the minimum and maximum velocity criteria described in section 2(a) above.

   The design engineer shall submit calculation including the slopes for each segment of the pipeline. Sewer slope shall not be changed in the field unless approved by the DWP District Engineer as it could negatively impact future capacity.

f. Manholes are required at grade breaks.

g. Provide 0.10-foot drop of invert elevation through manholes. Provide 0.20-foot drop of invert elevation at right angle alignment or bends.

h. Minimum 12-inch vertical separation is required when a sewer line crosses water/reclaimed water lines. Encase the sewer line in concrete in accordance with the City of Corona Standard Detail 419.

i. If separation with a parallel water main is less than 10 feet clear (edge-to-edge), design must meet requirements of City Standard Drawings 419 and be reviewed and approved by CDPH or DWP.

j. A minimum of 1-foot vertical separation is required between potable waterlines and both non-potable waterlines and sewer lines. The potable waterline must be above the non-potable waterlines and sewer lines. Separation criteria must follow current CDPH requirements.

k. The minimum unit flow factors used shall be per the following table or as revised in subsequent Sewer Master Plan Updates:

Land Use		*Existing Unit Flow Factor (gpd/ac)	*Ultimate Unit Flow Factor (gpd/ac)	Residential Flow Factors (gpd/du)
RR1	Rural Residential 1 (0.2 to 0.5 du/ac)	150	150	300
RR2	Rural Residential 2 (1 du/ac)	300	300	300
E	Residential Estate (1-3 du/ac)	500	500	300
LDR	Residential Low Density (3-6 du/ac)	1,000	1,000	270
LMDR	Low Medium Density (6-8 du/ac)	1,200	1,200	270
MDR	Medium Density (6-15 du/ac)	1,700	1,700	240
HDR	High Density (15-36 du/ac)	2,000	2,000	200
CBD	Commercial Business District	1,000	1,050	-
C or GCC	General Community Commercial	1,000	1,050	-
CP or OP	Office Professional	1,200	1,260	-
GI	General Industrial	1,100	1,155	-
LI	Light Industrial	800	840	-
I or School	Institutional	800	800	-
OS-R or OS-P	Open Space Recreational	130	130	-
QP or MU	Quasi-Public / Mixed Use	700	700	-

**Unit flow factors based on gross acres*

3. HORIZONTAL PIPE ALIGNMENT CRITERIA

a. Main Lines

1) Line to be 5.0 feet off centerline of street, and located on the opposite side as the potable water main.

2) Minimum ten (10) feet clear separation from potable and non-potable water mains.

3) Minimum three (3) feet separation with other utilities.

4) Curvilinear alignment will not be permitted except when approved by DWP.

5) Manholes are required at all change of directions, both horizontal and vertical, and at 350-foot maximum spacing.

6) Clean-outs shall not be permitted except when approved by DWP.

7) Private sewer mains shall have a manhole spacing every 350 feet.

b. Sewer Laterals

1) Must clear driveway and be provided with clean-out.

2) Ten (10) feet clear separation with waterlines and water services unless otherwise approved by DWP.

4. VERTICAL PIPE ALIGNMENT CRITERIA

a. Main Lines

1) Minimum depth shall be 7.0 feet of cover over the top of the pipe, except terminal reaches may be reduced to 6.0 feet of cover, where the line will not be extended in the future.

2) Vertical curve may be permitted – prior written approval from DWP is required.

b. Sewer Laterals

1) Minimum 5.0-foot cover at property line, minimum slope S = 0.02 with a saddle unless otherwise approved.

2) Laterals shall be located below the water main with a minimum clearance of 12 inches. Where clearances are critical lateral profiles are to be detailed on the plans.

3) Laterals shall not enter a manhole.

4) A backwater sewer valve shall be installed in an inspection vault, in conformance with the plumbing code, for all buildings where the rim elevation of the upstream manhole on the sewer main is above the pad elevation of the structure.

5. SANITARY SEWER MANHOLES

a. Pre-cast concrete manholes shall be constructed and lined with polyurethane (Sancon 100™ or equal) per City Standard Drawing 302.

b. Manholes shall be 5-foot in diameter with 3-foot frame and cover for depths up to 12 feet from finish grade to sewer invert. Manholes deeper than 12 feet shall be 6-foot diameter.

c. On the center of each manhole cover, lettering shall be cast to read "CITY OF CORONA - SEWER." This lettering shall be cast into the lid.

d. Manhole rim elevations shall be lower than all pad elevations immediately downstream. If this condition cannot be met, then back water valves must be installed in accordance with the Uniform Plumbing Code, Section 710.1. A letter with the tract

number and affected lots shall be prepared by the Design Engineer and submitted to the contractor/developer/owner with a copy to the Building Inspector, the Building Department, the Department of Public Works and the Department of Water and Power. Identify these lots on the grading and plumbing plans.

e. Manholes located in undeveloped land shall be surrounded by a 10-foot by 10-foot by 6-inch concrete pad reinforced with 6x6 10/10 WWF (minimum), marked with a 4-inch pipe embedded in concrete 2 feet below existing ground and 4 feet above existing ground. Manholes located in improved areas shall be located by chipping 1½-inch lettering in the curb face "MH" with dimensions to the manhole from a minimum of 2 ties points.

f. No stub-outs allowed on manholes, except where future connections are anticipated.

6. DROP MANHOLES

Drop manholes are not allowed except when specifically approved by the Department of Water and Power General Manager. If approved, the design shall be in accordance with the City of Corona Standard Detail 303.

7. PIPE MATERIAL AND SIZE

a. Main Lines

1) Main line minimum size shall be 8 inches.

2) Use SDR 26 PVC green pipe for all residential developments.

3) Use extra-strength Vitrified Clay Pipe (VCP) for all commercial and industrial developments.

4) Use ductile iron pipe with Protecto 401 ™ lining and two sheets of 8-mil polyethylene encasement, color green, where construction constraints, such as clearances with waterlines or excessive loading condition (depth of cover greater than 15 feet), warrant their use.

5) Construct all pipelines of the same material between manholes.

b. Laterals

1) Lateral minimum size for residences shall be 4 inches. Lateral minimum size for commercial and industrial units shall be 6 inches.

2) Use green PVC pipe, SDR 21, CERTA LOK ™ restrained joints for residential laterals. Call out pipe material, wall thickness, and joint style on the plans.

3) Use extra-strength vitrified clay pipe for all commercial and industrial laterals.

4) Laterals shall not be connected/manifolded together. Every individual building shall be connected to a public sewer line by a single sewer lateral. Multiple buildings on same property must have separate laterals connecting to the public sewer.

5) Use ductile iron pipe where separation criteria with water mains (i.e., clearances) cannot be met per CDPH separation requirements.

8. CORROSIVE SOIL

a. All pipeline designs shall require a geotechnical engineer to determine the existing soil corrosivity and the design engineer to recommend the appropriate cathodic protection facilities. The engineer shall specify on the plans and in the specifications the applicable corrosion control facilities.

b. All ductile iron pipes shall have at a minimum two 8-mil polyethylene protective sleeves color coded to match the contents of the pipe. Clearly denote this on each plan sheet.

c. All ductile iron pipelines crossing railroad facilities, large natural gas pipelines, or electrical facilities having impressed currents shall be provided with cathodic protection facilities.

d. All ductile iron transmission lines shall have cathodic test stations per DWP Standard Details 450 through 458. Clearly denote this on each plan sheet.

9. EASEMENTS

Where public sanitary sewers cannot be located in public roads, they shall be constructed in a prescribed easement to meet the following conditions:

a. A separate instrument is required if the easement is not shown on the Tract or Parcel Map. The instrument includes a legal description and exhibit 8½" x 11" showing the location of said easement. Private sewers are not allowed to cross adjacent/adjoining private parcels/land without special approval from DWP.

b. The easement shall be a minimum of 20 feet wide. Easements shall contain an all-weather access road in order to maintain the entire sewer system (pipeline, manholes, lift station, etc.) within the easement.

c. Easements for deep sewers shall be wide enough for sewer maintenance. The minimum width of easement shall be wide enough to accommodate a maximum of 1:1 side slopes, with a 5-foot wide by 10-foot maximum depth trench shield, and an additional 10-foot wide truck access road.

d. All legal easement descriptions and exhibits shall be prepared and stamped by a Registered Civil Engineer licensed in the State of California or Professional Land Surveyor licensed in the State of California and filed with the County Recorder if not shown on a tract or parcel map. Professional licenses must be current at the time of plan preparation.

10. LIFT STATION DESIGN CRITERIA

Avoid the use of lift stations wherever possible due to the associated cost and maintenance required. Design Engineer shall utilize the following minimum sewer lift station design guidelines.

a. Design the wet well with sufficient capacity to prevent short cycles whereby the pumps frequently start and stop, yet small enough that it will regularly evacuate sewage from the wet well to prevent the wastewater from becoming septic. The desired number of pump cycles should be limited to no more than 6 per hour for motors up to 10 horsepower. Motors up to 75 horsepower should start no more than 4 times per hour. Larger motors should cycle less frequently. Lift stations should have sufficient volume to store sewage in the event of mechanical or electrical failures, until the City can respond to the failure and prevent overflows.

b. Size the pumps to efficiently handle the peak wet weather flows. Provide a minimum of two pumps sized at the peak wet weather flow to the station, so that sufficient standby capacity is available when one pump is removed for repairs or experiences a mechanical failure. Select pumps capable of passing a minimum solid size of 3-inches without clogging. Select pumps with shafts, seals and impellers constructed of wear resistant material to provide long life. Provide Tungsten Carbide seals, Ni-Hard impellers, and 316 stainless steel pump shafts. For services where aggressive agents may be found in the sewage, such as at golf courses, select pumps with complete stainless steel construction, including the pump bowl, shaft, impeller, and motor housing.

c. Dry well lift stations must be properly ventilated and provide unobstructed access to all equipment. A minimum 3-foot clearance from all obstructions should be provided. Greater clearances may be required for equipment with special maintenance needs. Provisions for equipment removal including hatches, large door openings, and hoists shall also be provided.

d. Install discharge piping, valves, and equipment at submersible pump installations above grade.

11. FORCEMAINS

Force main Systems shall be of adequate size to efficiently transmit the total ultimate peak operational flows supplied by the connected wastewater pumping station(s), to the discharge point. Coordinate capacity computations with the proposed pumping system(s), along with any future flow requirement, if applicable. In order to provide adequate pipeline cleansing, force main flow velocity shall not be less than four (4) feet per second at the minimum pumping capacity nor exceed six (6) feet per second at ultimate design pumping capacity. The force main diameter, material, coating, pressure class/thickness class, etc. shall be as required by the City Standard Details, City Design Policy, and the design engineer. Provide signed and sealed calculations to substantiate the force main diameter. Design a redundant force main or a gravity bypass line if physically possible.

Other features, provisions, and operational procedures for these systems include:

a. Auto flushing connection with an approved backflow preventer and air gap.

b. The force main shall be flushed once per month with a minimum of 1½ force main volumes.

c. Emergency shutdown provisions to mitigate sewer spills/overflows.

d. Contractor/Engineer/Private Owner shall submit an operations and maintenance procedure complete with calculations.

e. Pipe shall be Ductile Iron Pipe with Protecto 401 ™ epoxy lining and wrapped with green-colored polyethylene encasement. 4-inch minimum pipe size.

f. Provide combination sewage and air vacuum valve assemblies at high points.

12. INVERTED SIPHONS

Avoid inverted sewer siphons wherever possible. If required, utilize the following minimum design guidelines.

a. Locate the inverted siphon completely within a public right-of-way. If a location within public right-of-way is unavailable, an easement or other right-of-entry is required subject to approval by the Department of Water and Power.

b. The inverted siphon shall not impact other facilities or be impacted by other facilities. Maintain adequate clearances from other facilities.

c. Provide a minimum of two barrels. Always provide one redundant barrel for by-pass capacity, emergencies, and maintenance purposes.

d. Minimum pipe size of 6-inch and minimum velocity of 3 ft/sec shall be considered for design of each barrel.

e. Minimize bends and angle points.

f. Provide cleanouts where the length of inverted siphon exceeds 400-ft. The size of the cleanout shall be adequate to handle the debris that may accumulate, and at least as large as the size of the inverted siphon.

13. PIPE TRENCH BACKFILL

a) All pipeline trench backfill within paved areas shall be per Public Works Standard 150.

b) All pipeline trench backfill within landscaped parkway areas shall be per Public Works Standard 149

c) All pipeline bedding shall be per Department of Water and Power Standard 308.

D. LOW PRESSURE SEWER SYSTEMS

1. GENERAL PROVISIONS

a. Submit plans and specifications for low-pressure sewer systems to the Department of Water and Power for review and approval. Secure a permit for each low-pressure sewer installation. Approval of low-pressure wastewater systems as an alternative to conventional wastewater systems shall be in accordance with the conditions listed in Subsection 2 unless other special circumstances justifying their use are affirmatively demonstrated.

b. It is not the intent of this design policy to utilize low-pressure systems as a replacement for conventional gravity sewer systems. However, as a means to provide service to an individual lot or a small group of lots or buildings where conventional gravity service cannot be utilized within reason, the Department of Water and Power may consider the use of a low-pressure system; providing the Design Engineer can show reasonable justification for its use.

2. CONDITIONS OF APPROVAL

a. The use of low-pressure sewer systems will be considered where:

1) build-out has left small parcels of property in precarious locations in relation to the lay of the land,

2) shallow bedrock conditions would require extensive rock removal,

3) unstable soil conditions prohibit construction of deep sewers,

4) temporary use would provide a cost effective alternative until gravity system construction is completed,

5) the proposed sewer is located a considerable distance from existing gravity sewers, or

6) the use of a low-pressure sewer system will eliminate the need for small public lift stations.

b. The applicant is responsible to evaluate all potential alternative wastewater collection systems and justify the selection of the low-pressure sewer system based on engineering and surrounding conditions.

c. Based on the information furnished by the Developer and the Design Engineer, the Department of Water and Power will decide the acceptability, scope and extent of the low pressure sewer system to be permitted.

CITY OF CORONA
DEPARTMENT OF WATER AND POWER

SEWER MASTER PLAN
SECTION 4

Section 4

CRITERIA

4-1 General

Establishing performance standards is an important part of developing new wastewater collection systems, and evaluating existing systems, as it forms the basis for system analysis and system improvement recommendations. These standards include methodology for estimating wastewater design flows and minimum design standards for the collection system pipes, lift stations, and force mains.

Average wastewater flows can be reasonably estimated from land use and their corresponding unit flow factors. The results are then compared to measured flows. Peaking relationships are needed for estimating peak dry weather and peak wet weather flows. Peak wet weather flows also include an allowance for inflow / infiltration (I/I).

Collection system design standards include minimum pipe size, minimum flow velocity, and depth of flow to pipe diameter ratio. Lift station criteria includes the capacity and number of pumps, wet well and force main sizes, redundancy, emergency power, remote monitoring capabilities, as well as safety and regulatory agency requirements. Finally, facility useful lives are needed for adequately scheduling replacement of the aging infrastructure.

4-2 Flow Monitoring

Flow monitoring is essential in developing unit flow factors, calibrating the system model, and estimating the average and peak flows.

A temporary flow monitoring program was developed, and field flow monitoring was conducted by ADS Environmental Services. The study was conducted over a period of seven (7) days at eleven (11) locations. The selected flow monitoring locations and a summary of the results are shown on Figure 4-1 and in Table 4-1. The flow monitors were in place from February 13, 2004 through February 19, 2004.

Table 4-1
Flow Monitoring Results

Site	Model MH ID	City Atlas		Pipe Size (in)	Location	Measured Flow (cfs)		
		Sheet	MH ID			Minimum	Average	Maximum
1	10-06100	F16	1381	18	2703 Wardlow Rd	0.227	1.408	2.816
2	10-07870	G15	1573	21	2380 Railroad St (WWTP 1)	0.415	1.471	2.618
3	14-11120	H14	1840	42	2047 Railroad St (WWTP 1)	2.438	9.602	15.796
4	16-31100	J15	3199	42	Railroad St, west of N. Lincoln Av	2.245	7.741	13.813
5	16-30490	J20	3538	10	Buenta Vista Av & Ontario Av	0.076	0.393	0.789
6	22-57550	M22	8210	10	Fullerton Av & Ontario Av	0.110	0.470	0.930
7	20-58480	M15	4963	12	Parkridge Av north of Mesa Dr	0.169	0.541	0.941
8a	20-55020	M16	4982	15	300 Reed Cir (WWTP 2)	0.000	0.806	1.603
8b	20-55900	M16	4991	18	300 Reed Cir (WWTP 2)	0.605	2.288	4.123
9	20-53950	M16	5004	30	Flood Control Channel (WWTP 2)	0.636	2.596	4.766
11	14-17580	I16	2489	10	Smith Av north of Pleasant View Av	0.365	1.351	2.327

Insert Figure 4-1 (Flow Monitoring Sites)

The flow monitoring sites were strategically chosen to aid in the development of unit flow factors. Because single family residential land uses make up nearly 30 percent of the total area and generate about 70 percent of the total wastewater, it was very important to monitor several different areas with primarily residential land uses. Flow monitoring Sites 1, 5, 6, 7, and 11 were selected specifically because the existing tributary areas were dominated by single family residential uses.

Flow monitoring Site 2 was selected to aid in the development of the industrial unit flow factor. Sites 3 and 4 were selected to gauge minimum, average, and peak flows into Wastewater Treatment Plant 1 for model calibration purposes. Similarly, Sites 8A, 8B and 9 gauged the flows into Wastewater Treatment Plant 2.

4-3 Unit Flow Factors

Unit flow factors utilized in this study were developed based upon the land use data obtained from the City's existing GIS and results of the temporary flow monitoring study. Atlas maps, aerial photographs and field reviews supplemented this information.

The average daily flow recorded at each flow monitoring site and gross acreage was utilized in determining calibrated unit flow factors for each land use. The calibrated flow factors were then increased to account for vacancy rates and any inconsistencies in the flow monitoring data. The resultant flow factors represent the existing conditions. The current residential vacancy rate is 3.65 percent. The current commercial / industrial vacancy rate is approximately 6 to 7 percent. The ultimate unit flow factors are not expected to increase dramatically, because densification is not expected. The industrial and commercial flow factors were increased by 5 percent to account for any changes from the existing types of uses that may generate more wastewater.

The unit flow factors developed for this study, representing average dry weather flows, are shown in Table 4-2. The existing and ultimate unit flow factors are given in gallons per day per gross acre. Residential flow factors are also shown in gallons per day per dwelling unit. These factors are based on the fact that the existing right-of-way and railroads account for about 22 percent of the total existing developed lands (see Table 3-1) and an estimated target density for each land use category. The average density specified per the General Plan was used for residential estate, residential low density, and residential medium density lands. For the categories of residential low medium and residential high, 6 du/net acre and 15 du/net acre were implemented, respectively. This resulted in a more conservative unit flow factor but comparable in relation to the factors estimated for the other residential areas.

The residential flow factors in gallons per day per dwelling unit, also shown in Table 4-2, can be utilized by the City to make decisions regarding the revenue and rates, such as the distribution of connection fee costs associated with the improvement and expansion of wastewater treatment plants.

Table 4-2
Unit Flow Factors

Land Use		*Existing Unit Flow Factor (gpd/ac)	*Ultimate Unit Flow Factor (gpd/ac)	Residential Flow Factors (gpd/du)
RR1	Rural Residential 1 (0.2 to 0.5 du/ac)	150	150	300
RR2	Rural Residential 2 (1 du/ac)	300	300	300
E	Residential Estate (1-3 du/ac)	500	500	300
LDR	Residential Low Density (3-6 du/ac)	1,000	1,000	270
LMDR	Low Medium Density (6-8 du/ac)	1,200	1,200	270
MDR	Medium Density (6-15 du/ac)	1,700	1,700	240
HDR	High Density (15-36 du/ac)	2,000	2,000	200
CBD	Commercial Business District	1,000	1,050	-
C or GCC	General Community Commercial	1,000	1,050	-
CP or OP	Office Professional	1,200	1,260	-
GI	General Industrial	1,100	1,155	-
LI	Light Industrial	800	840	-
I or School	Institutional	800	800	-
OS-R or OS-P	Open Space Recreational	130	130	-
QP or MU	Quasi-Public / Mixed Use	700	700	-

**Unit flow factors based on gross acres*

4-4 Peaking Factors

The wastewater unit flow factors discussed in Sub-section 4-3 are used to generate average dry weather flows (ADWF) entering the collection system. However, the adequacy of a sewage collection system is based upon its ability to convey the peak flows. At any individual point in the system, peak dry weather flow (PDWF) is estimated by converting the total average flow upstream of the point in question to peak dry weather flow by an empirical peak-to-average relationship.

The peaking formula commonly used in sewerage studies is of the following form:

$Q_{peak} = a\ Q_{ave}^{\ b}$

where Q_{peak} = Peak Dry Weather Flow
Q_{ave} = Average Dry Weather Flow
a, b = Peaking Formula Coefficients

The temporary flow monitoring data was reviewed to develop peaking relationships at each site. As expected, these relationships varied from site to site depending upon the makeup and size of the tributary land use. Several diurnal curves were developed for each of the (11) flow monitoring sites. Average hourly flows for each hour of the day at each of the sites were used to produce diurnal curves for each day of the week as well as composite diurnal curves for the weekend and weekday. Figures 4-2, 4-3 and 4-4 illustrate the citywide flow monitoring site and composite weekday, weekend, and overall diurnal curves. These figures all indicate the expected peaks and epitomize a typical diurnal curve. The highest peak occurs during the morning hours with another peak occurring in the evening. While peaking factors at the different sites ranged from 1.5 to 2.2 the overall composite factors were between 1.8 and 1.9.

Figure 4-2
Hourly Flow Variations
Weekday Average

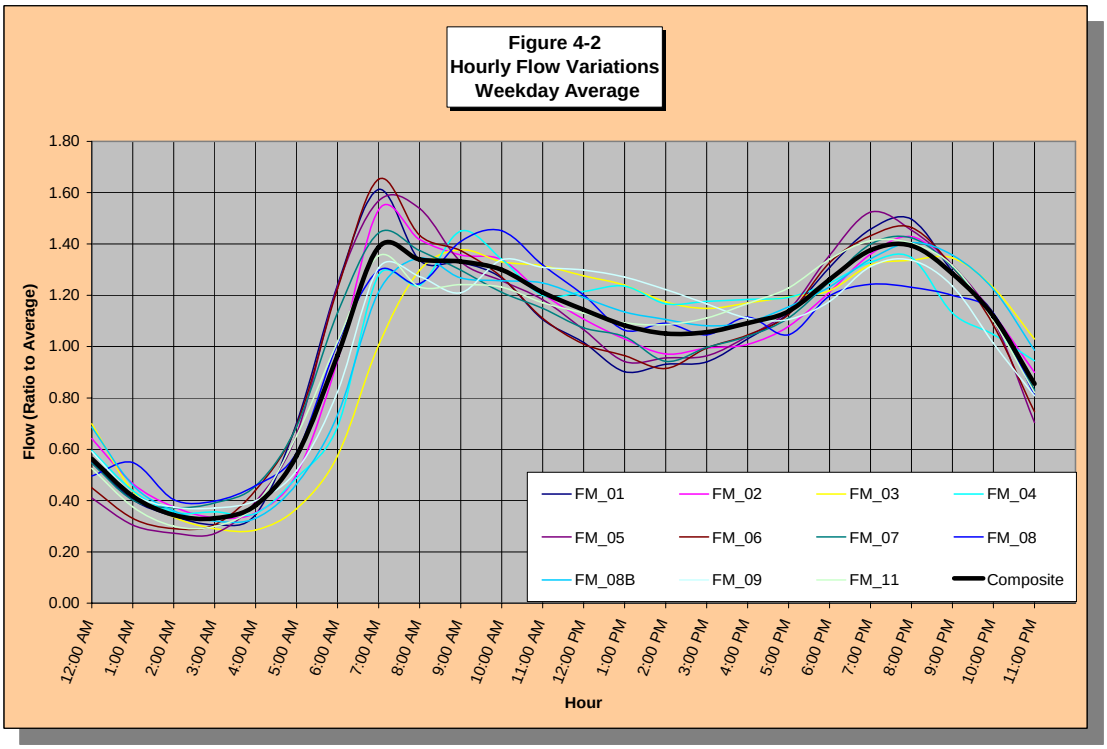
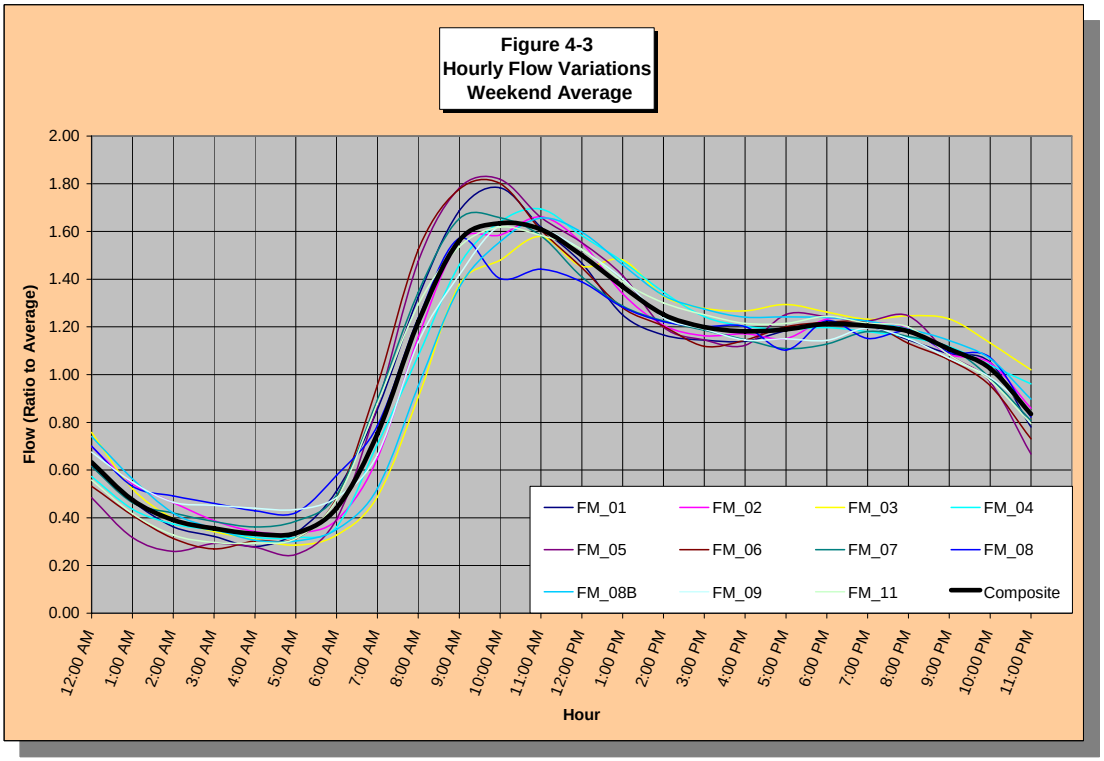
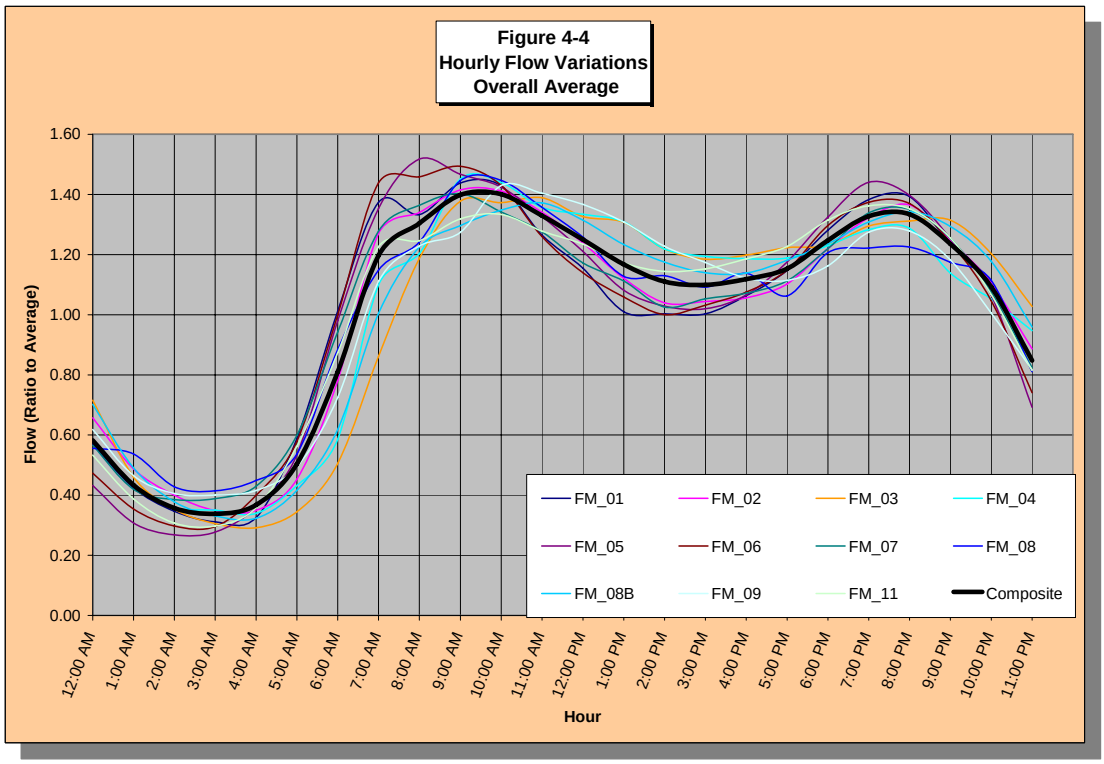


Figure 4-3
Hourly Flow Variations
Weekend Average





Based on the flow monitoring data, and our previous experience, the following peaking relationship was selected for this study:

$$Q_{peak}\ (cfs) = 1.95 \times Q_{ave}(cfs)^{0.92}$$

The peak wet weather flow (PWWF) has two components: peak dry weather flow (PDWF) and rainfall dependent inflow/infiltration (I/I). Therefore, the following equation applies:

$$PWWF = PDWF + I/I$$

Inflow and infiltration is discussed further in Sub-section 4-5.

4-5 Inflow and Infiltration

Inflow is the surface water that typically gains entry to the sewer system through perforated or unsealed manhole covers and illegal connections, such as roof and yard drains, during rainfall events. Infiltration is defined as water entering the collection system from the ground through defective pipes, pipe joint connections, or manhole walls. The sewer system design capacity must include allowances for these extraneous components, which inevitably become a part of the total flow. The amount of inflow and infiltration (I/I) that enters the system typically depends upon the availability and location of the stormwater drainage facilities, age of structures, materials and methods of construction, the location of the groundwater table, and the characteristics of the soil. In absence of flow monitoring data, many regulating agencies implement commonly accepted practices for estimating I/I. For example, I/I is often estimated based on the diameter and length of pipeline (100 to 400 gpd/ in. dia/ mile) or as a percentage of the peak flow or pipeline capacity.

Our experience from other master planning studies and review of limited flow monitoring information available during severe rainfall events indicate that the peak wet weather flow can vary from 10 percent of average dry weather flows in steeper areas with adequate drainage facilities, to over 400 percent of average dry weather flows in flat areas that lack significant drainage facilities.

For this master plan, several of the more significant and recent storm events that occurred during the past 10-years were studied. Rainfall information as well as treatment plant flows was used to evaluate the extent of the inflow and infiltration in the study area. Rain data was collected at two rain gage stations: Prado Dam (Army Corp of Engineers) and Chase and Taylor (Riverside County Flood Control and Water Conservation District). The studied rain events occurred on January 4, 1995; December 6, 1997; January 10, 2001; February 25, 2003; and March 16, 2003. Hydrographs were created for each of these rainfall events. Based on the Riverside County Hydrology Manual criterion, each event was assigned a storm frequency.

The average dry weather flows before and after the rainfall were compared to the peak flows seen at Wastewater Treatment Plants 1 and 2 during the wet weather events. A ratio of peak wet weather flow to average dry weather flow was then calculated. This factor was then plotted versus the frequency of the event and extrapolated. For a wet weather event with a 10-year frequency, the peak wet weather flow to average dry weather flow ratio is estimated at 2.5. Per conversations with City staff, the recent design of Wastewater Treatment Plant 3 utilized a factor of 2.6. Therefore, a factor of 2.6 will also be used for this Master Plan.

4-6 Sewer Design Criteria

Design criteria are established to ensure that the wastewater collection system can operate effectively under all flow conditions. Each pipe segment must be capable of carrying the peak flows without surcharging the system. Low flows must be conveyed at a velocity that will prevent solids from settling and blocking the system.

The City of Corona's minimum allowed slope of an 8-inch gravity sewer pipe is 0.004 feet per foot. Where this slope cannot be attained due to existing constraints, a more in-depth analysis must be performed and submitted to the City for approval. At a minimum, all pipes must be 8 inches or larger in diameter and the velocity of flow should be greater than 2 feet per second at average flow. This velocity will prevent deposition of solids in the sewer. A velocity of 3 feet per second is desired at peak dry weather flow, to resuspend any materials that may have already settled in the pipe. The corresponding minimum slopes for the various pipe sizes are as shown in Table 4-3.

It is important to note that the sewer sizes and slopes in Table 4-3 are provided for information only and assume the depth of flow in the pipe is half or two-thirds full (see footnote below Table 4-3). If there is insufficient flow to create this condition, greater slopes than those shown are necessary to acquire the desired minimum velocities.

Table 4-3
Minimum Sewer Sizes

Sewer Size	2 ft/sec Velocity Slope	3 ft/sec Velocity Slope
8" [(1)]	0.0040	0.0074
10" [(1)]	0.0025	0.0055
12" [(1)]	0.0020	0.0044
15" [(2)]	0.0012	0.0027
18" [(2)]	0.0010	0.0021
21" [(2)]	0.0008	0.0017
24" [(2)]	0.0007	0.0015

[(1)] Assuming sewer is flowing 1/2 full and n = 0.013

[(2)] Assuming sewer is flowing 2/3 full and n = 0.013

The design and analysis of gravity sewer systems are typically based upon the depth to diameter ratio (d/D). Pipes should meet the City's established criterion as follows:

- ***New*** pipes 12-inches in diameter and smaller: **d/D = 0.50** at peak dry weather flow.
- ***New*** pipes 15-inches in diameter and larger: **d/D = 0.67** at peak dry weather flow.
- ***Existing*** pipes 12-inches in diameter and smaller: **d/D = 0.64** at peak dry weather flow.
- ***Existing*** pipes 15-inches in diameter and larger: **d/D = 0.67** at peak dry weather flow.

All pipes should be designed with a d/D less than or equal to 0.82 at peak wet weather flows. This reserves a minimum of 50 percent (12-inch and smaller pipes) to 26.5 percent (larger pipes) of the pipe's full flow capacity for inflow and infiltration.

Considering the City's I/I study, it is recommended that the peak wet weather flow be estimated as the larger of the two following equations:

1. Peak Wet Weather Flow (PWWF) = 1.265 x Peak Dry Weather Flow (PDWF)

2. Peak Wet Weather Flow (PWWF) = 2.60 x Average Dry Weather Flow (ADWF)

The extra pipeline capacity also allows for the possibility that actual wastewater flows may be slightly higher than anticipated, especially during the hours when instantaneous or intermittent peak flows may occur. The peak dry weather flows are generally observed between the hours of 6:00 a.m. and 9:00 a.m. and 7:00 p.m. and 9:00 p.m. in residential areas. Industrial areas usually produce peaks later in the day. Peak flows may also be observed during rainfall events due to inflow. In addition to providing peak wet weather flow capacity, the area above the peak daily water surface helps to keep the sewage aerated, reducing the possibility of septic conditions and odors.

The design capacity of a gravity pipeline is the calculated capacity of the pipeline based on the Manning formula:

$$Q = 1.486 \; A \; R^{2/3} \; S^{1/2} / n$$

Q = flow in cubic feet per second

R = hydraulic radius in feet = A / P

A = cross-sectional area of the pipe in square feet

P = wetted perimeter in feet

S = slope of pipe in feet of rise per foot of length

n = Manning's friction factor

Sewer system capacity is established using a Manning's friction factor of 0.013 for vitrified clay pipe. A summary of sewer system design criteria is listed in Table 4-4.

Table 4-4
Sewer System Criteria

Collection System	
Minimum Pipe Size	8-inch
Minimum Velocity	2.0 ft/sec at average flow
	3.0 ft/sec at peak dry weather flow
Pipe Depth to	0.50 for pipes 12-inches and smaller at peak dry weather flow
Diameter Ratio	0.67 for pipes 15-inches and larger at peak dry weather flow
Lift Station	
Pumps	* Minimum 2 each sized at peak flow
	* Minimum solids handling capacity 3"
Wet Wells	* Sized to limit pump cycling to less than 4 to 5 times/hr
	* Provide sufficient storage at peak flow to allow response to a failure
	* Equipment to be maintained must be accessible without entering structure
Ventilation	* 12 air changes/hr minimum in dry well and as required by NFPA 820
	* 30 air changes/hr minimum in wet well if not operated continuously
	* 12 air changes/hr minimum in wet well if operated continuously
Controls	Redundant system. Float operated back-up controls.
Emergency Power	Stationary source with automatic transfer switch
Telemetry	Dialer system (minimum) at all pump stations to alert personnel in the event of a station failure
Forcemains	* Minimum velocity 3.0 ft/sec
	* Minimum size 4-inches
	* Air Vacs installed in vaults

4-7 Lift Station Design Criteria

It is desirable to develop a sewer collection system with as few lift stations as possible due to the associated cost and maintenance required. This master plan recommends replacement and upgrading of 9 lift stations. Further analyses, evaluation, and recommendations regarding the City's lift stations are found in Section 7. No new lift stations are currently recommended. However, in the case that a lift station is necessary or when upgrading or replacing an existing lift station, it must be designed to be reliable and sized with sufficient capacity. It must contain redundant equipment, an emergency power supply, sufficient storage, and be able to notify the appropriate personnel in the event of failure.

The primary components of a typical lift station are the wet well, dry well, pumps, motors, valves, ventilation and electrical equipment, controls and the force main. The following general criteria are recommended.

The wet well stores the incoming wastewater until a pump is activated to discharge it to a gravity facility for further conveyance to a treatment facility. It should be designed with sufficient capacity to prevent short cycles whereby the pumps frequently start and stop, yet small enough that it will regularly evacuate sewage from the wet well to prevent the wastewater from becoming septic. Generally, the desired number of pump cycles should be limited to no more that 6 per hour for motors up to 10 horsepower. Motors up to 75 horsepower should start no more than 4 times per hour. Larger motors should cycle less frequently. Lift stations should also have sufficient volume to store sewage in the event of mechanical or electrical failures, until the City can respond to the failure and prevent overflows.

The pumps should be sized to efficiently handle the peak wet weather flows. A minimum of two pumps sized at the peak wet weather flow to the station should be provided so that sufficient standby capacity is available when one pump is removed for repairs or experiences a mechanical failure. The pumps should be able to pass a minimum solid size of 3-inches without clogging. The shafts, seals and impellers should be constructed of wear resistant material to provide long life. Tungsten Carbide seals, Ni-Hard impellers, and 316 stainless steel pump shafts are recommended. For services where aggressive agents may be found in the sewage, such as at golf courses, complete stainless steel construction is recommended. This includes the pump bowl, shaft, impeller, and motor housing.

The dry well houses the valves, pumps, motors and electrical equipment and controls. It must be properly ventilated and provide unobstructed access to all equipment. A minimum 3-foot clearance from all obstructions should be provided. Greater clearances may be required for equipment with special maintenance needs. Provisions for equipment removal including hatches, large door openings, and hoists should also be provided.

The force mains should be selected to operate within a 3 feet per second to 5 feet per second velocity range, but should not be smaller than 4-inches in diameter.

While submersible lift stations may be utilized for the small flows, the larger lift stations should be the wet well/dry well type. They should be designed with easy access to all equipment. The National Electric Code classifies the wet wells of wastewater pumping stations as Class I, Group D, Division 1 facilities if continuously ventilated at less than 12 air changes per hour, and Division 2 if continuously ventilated at 12 or more air changes per hour. Dry wells, which are physically separated from wet wells, if ventilated at less than 12 air changes per hour, are classified as Class I, Group D, Division 2 locations. Wet wells, and under certain circumstances dry wells, are considered confined spaces and should be entered in accordance with the corresponding requirements of Occupational Safety and Health Administration (OSHA).

All lift stations should incorporate redundant control systems for operation of the pumps. A float system should be used as a backup for a primary control system that utilizes an ultrasonic device or a bubbler system for level measurement and pump operation.

Stations in which have an ultimate peak wet weather flow 500-gpm or greater shall be wet well/dry type pump stations. Stations with less than 500-gpm ultimate peak wet weather flow should be submersible type pump stations.

Telemetry equipment is required in all stations. The City's standard telemetry equipment consists of a radio, a telemetry panel, a RTU/PLC, and an antenna. Depending upon the complexity of the installation the City may also employ ethernet equipment and switches so that programming, data acquisition, monitoring of other sites can be accomplished with a laptop computer in the field.

An emergency power source is required to operate the pump station during outages of the primary power source. A standby generator with an automatic transfer switch is the preferred type of emergency power source.

While lift stations may be necessary to serve portions of the City's service area because of topographic requirements, all feasible efforts should be made to eliminate their use. In evaluating the feasibility of constructing a lift station, a detailed comparison with a gravity alternative should be made. The service lives of each facility, the cost of operation and maintenance, as well as the

many problems associated with the development of flows during the first several years should be carefully considered. Service criteria for sewer lift stations are summarized in Table 4-4.

4-8 Service Life of Pipe and Lift Station Equipment

In addition to the design criteria discussed in previous sections, the useful lives for which relatively trouble-free service can be expected are also of great importance when assessing an existing or future sewer system. Once the service life of a facility is exceeded, it becomes subject to failure and is often expensive to maintain. The determination of useful life can be difficult and depends on many different considerations including the following:

- Type of materials used and recorded performance of similar installations
- Velocities and flow rates expected in the system
- Chemical and biological conditions of the wastewater
- Construction methods and installation quality
- Frequency, thoroughness, and types of Maintenance

The useful life values listed in Table 4-5 are generally accepted as prudent planning criteria and are used as benchmarks for replacement recommendations in this study. The majority of the pump stations' piping, valves, mechanical, and electrical components have exceeded the recommended useful lives listed in Table 4-5 due in large part to the City's fine maintenance practices.

Table 4-5
Planning Criteria for Facility Useful Life

Facility	Description	Useful Life (Years)
Gravity Sewers:	Asbestos Cement Pipe (ACP)	50
	Cast Iron Pipe (cip)	50
	Ductile Iron Pipe (DIP)	50
	Plastic Pipe	50
	Truss Pipe	50
	Vitrified Clay Pipe (VCP)	50
	Manholes	50
Forcemains:	Asbestos Cement Pipe (ACP)	50
	Cast Iron Pipe (cip)	50
	Ductile Iron Pipe (DIP)	50
	Plastic Pipe	50
Lift Stations:	Structure	40
	Piping	15
	Valving	15
	Mechanical	15
	Electrical	20

Values listed above are from the State Controller's Uniform Utility Accounting System for the State of California, Appendix A, Suggested Useful Lives of Fixed Assets